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THE

NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

WM. DENISON ROEBUCK, F.L.S.,

Recorder to the Conchological Society, and Hon. Secretary Yorkshire Naturalists' Union, &c.;

AND

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Member of the British Ornithologists' Union, and of the British Association Committee on the Migration of Birds; Hon. Secretary, Yorkshire Naturalists' Union, &c.

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PREFACE.

On the completion of their first volume the present Editors tender thanks to the contributors and subscribers whose generous and hearty co-operation has assured the success of the journal and made it what it aims to be, the recognised natural history organ for the ten northern counties of England and the Isle of Man. Reference to the list of contributors at p. 407 will show how extensively the sympathies of northern naturalists have been enlisted, and the value and importance of their contributions may be ascertained by an inspection of the contents of this volume.

The papers on the micro-palæontology of the northern carboniferous shales, the oolites of the Cave district, the botany of Teesdale, and the natural history of Spurn, together with the lists of marine algæ of Scarborough (including one described as new to science), of the coleoptera and lepidoptera of Lancashire and Cheshire, and of the avifaunas of Teesdale, Coquetdale, and the Solway, together with the regular series of meteorological observations, may be cited as useful contributions towards the systematic working out of definite lines of investigation. Besides this, numerous important new specific records have been made.

For Northumberland and Durham, *Arenaria serpyllifolia*, *Centunculus minimus*, *Radiola millegrana*, *Viola curtisii*, and *Corallorhiza innata* among the plants, *Chærocampa nerii* among the insects, the Spotted Eagle and the Red-breasted Flycatcher among the birds, and the Noctule among the mammalia, are important additions, the two birds and the *Corallorhiza* being also new to the north of England.

For Cumberland and Westmoreland two new maritime varieties of well-known British plants are described for the first time.

For Lancashire and Cheshire, besides various cryptogams and the numerous species of coleoptera and lepidoptera, *Heliothis peltigera* is recorded.

For Derbyshire (and the Isle of Man) little appears to have been done of late, except among the cryptogamia, one or two of which are probably new.

For Nottinghamshire the additions are two—the Puffin and *Amalia gagates*.

For Lincolnshire the Wild Cat, the Sperm Whale (a three-century-old record), Temminck's Stint, and *Amalia gagates* may be cited.

The Yorkshire additions are numerous and important. The two Whales—Sowerby's and Rudolphi's—are both species of extreme rarity anywhere, and quite new to England also. The Barred Warbler, Desert Chat, Whiskered Tern (all three new to the north), and Little Owl raise the recorded avifauna to 311, and *Paludina contecta*

among the mollusca is a novelty for South-East York. In Lepidoptera the new records are *Erastria fuscula*, *Melanippe unangulata*, *Hedya servillana*, *Eupœcilia dubitana*, and *Phoxopteryx diminutana*, and in Hymenoptera the county list is strengthened by 31 additions. In other groups *Bdella hexophthalma* and *Chernes nodosus* are new for Yorkshire and for Britain. In botany *Sagina ciliata*, *Agrimonia odorata*, *Polypodium calcareum*, and one or two *Charæ* are new for North-West York, and among the cryptogamia there are several new county records.

Numerous mosses and hepatics have been recorded, including *Hedwigidium imberbe* in the Lake district, many of which are probably new county records, but in the absence of a standard of reference it is difficult to say.

In geology and palæontology may be cited the papers on drift coal in Durham, and a lacustrine deposit in Yorkshire, and the record of what is incomparably the most perfect specimen of *Megalichthys hibberti* known to exist.

The papers of general interest and wider application which appear in this volume, those dealing with variation in lepidopterous insects, fertilisation in phanerogamic plants, the reproduction of the eel, the natural history of the bull-trout, and the distribution of *Achatina acicula*, may be referred to.

For the convenience of readers, and more especially of working naturalists, the index has been compiled on a somewhat novel principle.

So much for the volume now concluded.

For the future, the magazine is to be enlarged to 32 pages monthly, and the leading features of the present volume are to be retained. This enlargement makes it necessary that the list of subscribers should be not only maintained but enlarged, and the Editors, whose wish it is to maintain a high standard of excellence, confidently rely upon the continued co-operation of their present contributors, and upon the support of all who take interest in the detailed and systematic study of the physical features and natural history of the Northern Counties of England.

No. 109. AUGUST, 1884.

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Contents:

PAGE

THE SPURN—*John Cordeaux* 1
RED-BREASTED FLYCATCHER IN NORTHUMBERLAND—*Geo. Bolam* 9
TEESDALE BOTANY—*James Backhouse* 10
THE SEVEN SLEEPERS IN MANX TRADITION—*J. M. Jeffcott.* 14
DEPOSIT OF LACUSTRINE MARL IN WEST YORKSHIRE—*Prof. G. A. Lebour, M.A., F.G.S.* .. 16
YORKSHIRE NATURALISTS' UNION AT HAWES 17
ORNITHOLOGICAL NOTES .. .. 9 & 19
Nesting of Twite at Thorne, *T. Bunker*; Breeding of Hawfinch in Durham and Northumberland, *W. E. Clarke, F.L.S.*; Avifauna of Washburndale, *Lord Walsingham, M.A., F.L.S. & W. E. Clarke, F.L.S.*; Great Tit and Bees, *J. Whitaker, F.Z.S.*; Spring Birds near Mansfield, *J. Whitaker, F.Z.S.*
CONCHOLOGICAL NOTES 20
Unio pictorum at Ossington, *W. Gain*; Paludina contecta in Yorkshire, *W. Nelson*; Slugs in co. Durham, *W. D. Roebuck, F.L.S.*; Zonites radiatulus v. viridescenti-alba in Yorkshire, *W. Nelson.*
BOTANICAL NOTES .. .. 13 & 21
Dewsbury district flora, *P. F. Lee*; Æscidium pimpinellæ v. apii, *Thomas Dennis*; Manchester Cryptogamic Society; Physcomitrium pyriforme, *C. P. Hobkirk, F.L.S.*; Rosa tomentosa in Notts., *W. Gain & F. A. Lees.*
MISCELLANEOUS .. .. 8 & 15
Ornithological impossibilites, *C. M. Adamson*; Eupœcilia dubitana at Huddersfield, *G. T. Porritt, F.L.S.*
BOOK NOTICES (Gurney's 'Diurnal Birds of Prey' and Ibbotson's 'Ferns of York') 22
NOTES AND NEWS 22
RAINFALL 24

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1884.

The NATURALIST.

It being the wish of the Editors to make the journal the recognised organ for information concerning the natural history of the North of England. they hope to rely on Naturalists keeping them supplied with articles and short notes from time to time.

Communications should be written on *one side* of the paper only, and should be in the hands of the Editors as soon after the commencement of the month as possible.

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BOOKS RECEIVED.

A List of Diurnal Birds of Prey, with references and annotations. By John Henry Gurney.
Another Book of Scraps. By Charles Murray Adamson.
Grevillea. edited by M. C. Cooke, June, 1884.
Report on the Migration of Birds. Fifth Report, 1883.
Journal of Conchology.
The Naturalists' World.
Annual Report of the Liverpool Geological Association.
&c., &c.

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THE NATURALIST.

NEW SERIES, VOL. X.

1884-1885.

THE SPURN.

By JOHN CORDEAUX,

Great Cotes, Ulceby, Lincolnshire; Member of the British Ornithologists' Union; and of the British Association Migration Committee; &c.

THE long, narrow, and curved promontory called the Spurn, Spurn Head or Point,* lies between the northern sea and the Humber. The actual Spurn of to-day is—geologically speaking—of modern origin, a narrow ridge of sand and gravel, some three miles in length, occupying the place of once solid land, the old Yorkshire coast line, which terminates at or near Kilnsea. Northward from this point for thirty-six miles, till we reach the chalk of Flamborough, the coast presents no solid rock, low cliffs of gravel, sand and clay, rising at Dimlington to one hundred and fifty feet above high water, and resting on purple boulder clay, of remarkable stiffness and tenacity, containing an immense variety of derivative and far-travelled rocks. Through all the range of history and probably far back into pre-historic times the sea has been constantly stealing away the land; it is calculated that since the Norman conquest one mile in breadth has been lost, and more than two miles since the Roman occupation; a waste equal to two and a half yards in a year on an average of the whole coast† line. Our own experience points to a more rapid waste, and near Dimlington we have seen large masses of cliff break away fully fifty yards in length and several yards in breadth in the course of a single winter. There are those now living who can very well remember Kilnsea old church, which sixty years since stood on an eminence east of the present village, with a road and intervening lands between it and the beach. The site of the church is now in deep water, from one to two hundred yards beyond the lowest fall of spring tides. In 1836 the village itself was removed to the

*The Rev. G. S. Streatfeild in 'Lincolnshire and the Danes,' p. 241, note 3, says: 'Head is probably redundant; cf. Icelandic *Spyrna*, to strike with the feet, Anglo-Saxon *Spurnan*. But Mr. Charnock would derive it from Anglo-Saxon *Spyrian*, to track. The two words *Spyrian* and *Spurnan* are radically connected.'

†Phillips's 'Yorkshire.' Ed. II., p. 122.

Humber side of the fast narrowing promontory. In old maps and records of Holderness are names of villages as Frismerk, Tharlethorpe, Pottersfleet, Upsal, Redmayr, Pennysmerk, Hartburn, Auburn, Hyde and others all now beneath the sea-bed.* Everywhere along this lonely coast-line is waste and ruin; no place so strong but in time succumbs; frost, rain, and wave are the tools with which nature works to undermine and carry off the solid land. Village church and homestead alike disappear, and the bones of the buried dead drop from the shattered cliff to find a final resting place beneath the waters of the wild north sea.

The gravel, sand, and boulders of these fast-vanishing cliffs are drifted southward and deposited in large quantities along the promontory, which indeed owes its existence to the waste of Holderness; in itself, too, Spurn is constantly undergoing change, for we find along the Lincolnshire coast beds of pebbles and water-worn boulders which can only have been derived from the Yorkshire cliffs.

Spurn is rich in memories of many races. The conquerors of the world knew it well; they had a station at or near Patrington (*Prætorium*) from which a branch road (*via vicinalis*) ran to York, and grain from Yorkshire cornfields was shipped from Spurn to the Rhine and Gaul.† Roman remains have been found at Easington, and we have seen a small bronze bull dredged up in the bay, which perhaps once figured as the head of a military standard. The low cliff east and west of Kilnsea contains seams—kitchen-middens—made up of shells, bones and broken pottery, the latter apparently used for cooking, of Brigantian or Romano-British workmanship; these have been turned on the wheel, and the dark clay, probably of local origin,‡ mixed with coarsely pounded calc spar to give strength and consistency to the vessel. Bones found in these localities are generally those of the small British ox, *Bos longifrons*, represented by the Welsh cattle of to-day, red deer, swine and wild boar,§ also considerable quantities of oyster and mussel shells, and *Helix nemoralis*, the last no doubt also used as food. Coins, mostly

* 'Tracks on Holderness.' Thos. Thompson, 1821.

† There is no mention made in the voyage of Pytheas of Massilia (circa 330 B.C.) of the Humber estuary, although it is apparent that this Humboldt of his time coasted along the eastern shores of Britain on his return voyage from Scandinavia and Ultima Thule. Ptolemy the geographer, who lived in the first century after Christ, marks it on his chart as *Abus flumen*, and the point to the north *Ocellum promontorium*.

‡ The name Kilnsea is suggestive of ancient potteries, as is also Kilnwick near Driffield and Kilnhurst near Rotherham.

§ Recent examinations of the Holderness gravels have resulted in finding remains of *Bos primigenius*, *Cervus megaceros*, *C. elaphus*, *Rhinoceros* and *Trichecus rosmarus*.

those of the latter empire, have frequently been picked up on the beach below the cliffs.

The chief historical interest associated with the promontory centres in the ancient port of Ravenspurne, Ravensrode, Ravensburgh or Ravenser—for the name is variously written. Northmen and Danes probably made much use of this port, which, like Grimsby on the opposite coast, afforded them unusual facilities in their marauding excursions; and of both it may be said—

'The old sea-faring men
Came to me now and then,
With their Sagas of the seas;
Of Iceland and of Greenland,
And the stormy Hebrides.'

The Humber port was a large and flourishing place at a time when Hull was a poor fishing village, a borough also in the reign of the first, second, and third Edwards, sending two members to Parliament. There was a fair here which lasted thirty days, commencing on the eve of the nativity of Our Lady (Sept. 7th), besides two weekly markets. In 1332 Edward Baliol sailed from Ravensburgh with a considerable army, and on arriving in Scotland was crowned king. In 1399 the young Duke of Lancaster landed and commenced the campaign which placed him on the throne as Henry IV., and in 1471 Edward of York, returning from Flanders, landed and moved on York, subsequently to march southward and fight the battle of Barnet, an event which placed him likewise on the throne of England, and dyed the white rose of York a crimson red.

Leland, writing *circa* 1540, places Ravensburg at the extreme point of Yorkshire just within the Humber, and from this date we hear no more of the famous port. The actual site of old Ravenspurne is probably somewhere in the bay to the north-westward of the lighthouses.

There was probably a watch tower, or a light, on the promontory, at the time of the Romans, and some think Ptolemy's *ocellum* (the little eye) may have reference to this. The first historical light or beacon was placed on the Spurn by the hermit Richard Reedbarrome in 1428; and in 1677 a lighthouse was erected on Conny hill (wherever that may be) by Mr. Justinian Angel, of London, by patent of Charles II. In later years (1786) Smeaton erected a lighthouse which was superseded by the present modern erections.

To have a just idea of the position and proportions of the headland we should view it from the lantern of the higher lighthouse, from which point of vantage we overlook the entire length of

'The long low dune, and lazy plunging sea.'

Spurn it will be seen resembles a long pear-shaped island, a mile in length and a few hundred yards in breadth, joined to the mainland by a narrow curved isthmus of sandhills, so narrow that, at high water, it is not difficult, standing on the ridge, to pitch a stone into the sea on one side and the Humber on the other. On a clear day the view from the lighthouse is very pleasing, to the south and west the Lincolnshire coast, trees and houses distinctly visible at the distance of seven miles, backed by the range of the wolds, on the highest level of which we can see Pelham's pillar in the Brocklesby woods; to right and left there is

'The long, grey, horizontal wall of the dead calm sea.'

Northward is the Yorkshire coast line, Dimlington high-land and the towers of village churches, and homesteads buried in trees. At low water a vast extent of mudflat is laid bare on the Humber or concave side; in the autumn and winter this is the resort and favourite feeding ground of thousands of waders; on the sea or convex side there is a comparatively narrow belt of firm yellow sand, sweeping northward in one bold curve to Kilnsea beacon and Dimlington.

Perhaps the chief interest of Spurn is connected with the periodical occurrences of various birds during the vernal and autumnal migrations. Migrants following the coast-line at the latter season on their southward journey pass to the extreme end of the point before launching out to the Lincolnshire side. Numerous species, too, which come direct across the north sea by an east to west flight find here a temporary resting place before proceeding inland; hence it follows that in favourable seasons there is a constant succession from day to day of winged travellers. To enumerate all the species recorded here and in the neighbourhood would exhaust the greater portion of the British list, and many of what are designated casual and accidental visitants in the Yorkshire avifauna* have occurred at or near Spurn.

Recent additions are the Rustic bunting (*Emberiza rustica* Pall.) a native of north-eastern Europe and northern Asia, shot near Kilnsea beacon, on September 17th, 1881; a fine example of White's Thrush (*Turdus varius* Pall.) obtained at Rimswell, near Withernsea, in November, 1881, and now in the collection of Mr. R. T. Burnham, of the former place; and the Bluethroat (*Cyanecula*, ? species) in immature plumage, one of a pair obtained at Spurn on August 11th, 1882. In the schedules recording the migration of birds at the Spurn lighthouse in 1883, a Manx

*'A Handbook of the Vertebrate Fauna of Yorkshire,' 1881. Clarke and Roebuck.

shearwater is entered as killed against the lantern at 2 a.m. on August 5th, and a Honey buzzard was taken alive on the balcony of the low light, at 2 a.m. on September 14th.

Woodcocks arrive in considerable numbers with north and north-east and south-easterly winds. Coast shooters affirm that it is a south-east wind which brings *large grey* or light-coloured cocks, a north wind bringing *small red-coloured* birds, the former no doubt coming from more southern localities than the small red Scandinavian bird. At the time the Woodcocks are expected, the sandhills frequently swarm with Gold-crested Wrens; so regularly do these appear that they are locally known on the coast as 'woodcock pilots.' Only a few birds nest on the promontory; about a mile north of the lighthouse there is a colony of the Lesser Tern, which unfortunately is becoming smaller each year through the senseless and relentless plunder of the nests by excursionists. The Ringed Plover nests also on the beach above high-water level; Pipits and Linnets are plentiful amongst the sandhills, and the nest of the latter is an extremely pretty structure, lined with the white feathers of the Tern. Cuckoos abound in May, and frequently appropriate the nest of the meadow pipit for their egg. The Sheldrake recently nested here, and no doubt would continue to do so if left unmolested.

It is a curious fact that in the spring migration the Bar-tailed Godwit, Knot, and Grey Plover, which, during the first week in May, are very common on the Humber shores, do not appear to go north of Spurn, but leave the coast there to cross the North Sea; this line of migration is suggestive of an ancient coast line, which, towards the end, or perhaps subsequent to the last glacial epoch, swept east or north-eastward from Holderness to southern Scandinavia and the mouth of the Baltic. It is a striking fact, as mentioned by Mr. J. R. Mortimer in a paper read before the British Association at York, 1881, that chalk boulders south of Hornsea contain black flints, which are never found in the Yorkshire chalk, and which must have come from Norway; the flints north of Hornsea are more of the Yorkshire type, and probably derived from Flamborough.

Spurn has also long been famous for the capture of rare insects, many of these, such as the lepidoptera, unquestionably coming from beyond the sea. The observations taken at Heligoland by Mr. Gätke, and recorded from time to time in the migration reports, show that not only birds but immense numbers of butterflies and moths pass that island, travelling from east to west. Some years since many Convolvulus Hawk-moths were washed up by the waves on the coast between Spurn and Kilnsea, having doubtless perished

in crossing;* and quite recently we received three Death's-head Moths taken on vessels far from land in the North Sea. Occurrences also in recent years of Locusts at Spurn and the continental form of *Vanessa Antiopa* in Lincolnshire, and the great flight of *Colias edusa* in 1877 from the eastward, all point to the same conclusion—the migration on a large scale of insects to our shores from the Continent. Judging from Heligoland captures, a list of the night-flying moths which settle on the panes of the lanterns of east coast lighthouses, would give very interesting results.

In 1877 Mr. Lawton found a larva of *Deilephila galii*, the Bed-straw Hawk moth, which feeds on the plant known as the Ladies' Bed-straw on sand hills near the coast. Other moths more or less common are *Chærocampa porcellus*, the Small Elephant Hawk-moth; *Euchelia jacobææ; Leucania littoralis* (the only locality for Yorkshire); *Tapinostola elymi*, the Lyme-grass, which is common; *Nonagria lutosa*, the Large Wainscot; *Mamestra abjecta*, a very local species, of which in 1880 Mr. Dobrée took eleven examples and missed several others; *Agrotis valligera; A. corticea; A. ripæ*, but differing considerably from the southern form; *A. cursoria*, much darker than southern specimens; *A. tritici; A. aquilina; A. præcox;* and *A. ravida.*

Many of the fishes of the estuary may be considered deep-sea forms, which approach the shore for spawning. The Common Skate is plentiful in winter. The Lesser Weever or 'Sting-fish' is very common; so also is *Cottus scorpius*, occurring in prodigious numbers, the stomachs of this fish being generally full of freshly swallowed crabs about an inch across the carapace; most abundant also in summer is the Pogge, or Armed Bullhead, locally known as 'Rough-nose,' but it disappears in the winter, probably retiring to deep water. The Viviparous Blenny is commonly taken in the seine nets, as also is the Lesser Grey-mullet (*Mugil septentrionalis* Günth.), a common fish in the spring and summer. The Cod, Coal-fish, Turbot and Plaice, Sole and Founder all occur, mainly young fish; the Turbot run about nine inches in length, or about as large as a dinner plate. Salmon are not uncommon during the period of migration, as also is the Salmon-trout (*Salmo trutta*). A salmon fishing station was worked some years ago at Stallinborough, on the Lincolnshire side of the Humber. The Great Pipe-fish (*Syngnathus acus*) is common, and a single specimen of the Straight-nosed Pipe-fish (*Nerophis ophidion*) was brought up in a crab-pot in May 1884. The King-fish (*Lampris luna*) was cast up at Spurn some years ago; and in April 1882, the

* According to Mr. P. W. Lawton, of Easington, this species (*Sphinx Convolvuli*) is sometimes very plentiful.

Torpedo (*T. hebetans*) was taken in the surf at Easington; while in 1877, a Boar-fish (*Capros aper*) was caught at the mouth of the Humber.*

As might be expected, the plants growing at Spurn are, as a rule, such as flourish in maritime situations. The Sallowthorn (*Hippophaë rhamnoides*) grows abundantly, both here and on the Lincolnshire coast, the dense thickets often swarming in September with migrating warblers, and in October with the tiny Gold-crest. Many a Ring-ousel and Redwing, after a weary sea passage across the 'flint-grey flood,' drops at dawn into the welcome shelter to find a breakfast ready prepared in the crimson coronal of berries which adds so much to the beauty of the shrub. The Sea Holly, with its spiny glaucous leaves and grey blue-flowers, is a conspicuous plant, as is also the Sea Bindweed, whose trailing stem and rose-coloured flowers adorn the sand hillocks, and flocks of Twites and Linnets linger in the autumn to feed on the seeds, as well as on those of *Glaux maritima*, *Arenaria peploides*, and the common Sea-purslane.

There are few places where the pretty variegated shell of *Helix nemoralis* can be found in greater numbers, and after a shower of rain the stems of the seagrass swarm with them, as also with *Helix ericetorum*; the latter everywhere a common heath and down shell, and it is alleged its consumption by sheep in their ordinary food gives the superior quality to down fed mutton.

The geologist will find much to interest him in the fine section of the purple boulder clay exposed in the cliffs at Dimlington, containing derivative fossils and numerous erratics ice-grooved and polished. In the 'basement' or 'shelly boulder-clay' which underlies this, and is exposed along the beach at low-water mark, shells of an undoubted arctic character have been found—twenty-seven species in all. †

To some, the daily life of the small colony on the Spurn may appear uneventful and monotonous in its practical separation from their fellows on the mainland. The naturalist, however, will not share this view, for there are probably few situations on our northern shores which offer greater attractions; we have rarely visited the place without finding something to interest, it may be a waif or stray of the sea cast on the beach, the arrival of migratory birds, an insect, plant, or shell not noticed before. If all these fail,

* We have to thank Mr. William Eagle Clarke for lists of the fishes and insects which have occurred at Spurn.

† For further information we would refer our readers to a paper by Mr. G. W. Lamplough, published in the Geological Magazine, December, 1881.

there are the infinite changes of sea and cloudland—wonderful effects of parting day, as the sun dips beyond the western wold and when for a short space the grey river is transformed as burnished copper, and the oozy mudflats are purple with reflected light. Then there is the solitude and all-aloneness of the place—never more felt perhaps than at night when, from the clearness of the air itself, the soft light of star and planet glows as silver lamps let down in space, when the far-off cry of shore birds comes low and subdued, and the whispering breeze through the wiry seagrass is as the tinkling of fairy harpstrings, and beyond and above all minor notes the intermittent boom of the great sea, like a child sobbing itself to sleep in the darkness.

Ornithological Impossibilities.—It has often struck me as unintelligible why some, even scientific men, have proclaimed the occurrence in this country of birds which inhabit distant regions, without having ascertained the possibility or impossibility of their having flown here. Now, it seems to me probable that some species of, say American, migratory birds which go to the far north to breed might appear here, they, whether old or young, having travelled across from land to land where the distance is not so great, and having once got across from one continent to the other, their migratory instinct would probably lead them southwards; but the reported occurrence of American species which do not migrate very far north, should I think be always open to suspicion. It must be a not very difficult matter to find out the distance birds really can fly, and common sense I think tells us that this should be ascertained before credit is given for what may prove to be an impossibility.

Ornithology, as a study, is not merely noting the capture or the having observed birds. The first thing to be done is to acquire knowledge so as to be able to determine what a bird really is when obtained (not seen only), and this knowledge can only be acquired by long training. One having gone through this training (not as a bird stuffer only) is alone capable of forming an opinion. There cannot be the least doubt but that hosts of the recorded notices of birds are totally incorrect, even of those which have found their way into scientific works. Were attention paid to this matter many of the reputed British species would have to be omitted from our lists—amongst the rest the Swallow-tailed Kite, which is merely a summer resident in North America, and apparently does not go far north even in summer. Now most of our occasional visitants appear either in spring or autumn during migration, and in such cases as the one mentioned, its migrations would not in any circumstances, so far as we can judge, bring it this way. Shaky evidence, ancient or modern, is of little value unless corroborated by facts which are capable of being proved satisfactorily.

There seems to be a desire to make collections of British birds. A correct one, such as would give people an idea of what they are likely to meet with alive, should contain the birds in the plumages in which alone they are actually met with in this, not in the various plumages they acquire in other countries. Many of our English birds (together with those reputed) have, perhaps, only appeared here in immature plumage, but in collections a mature foreigner very often represents the species, and gives a wrong impression, and not only so, but eventually the foreigner is looked upon as if really obtained in this country.

I hope the remarks I have made will not discourage any one from studying ornithology. I only wish to point out how little is yet known substantially, and how few there are whose judgment can be depended on.—C. M. Adamson, Newcastle-on-Tyne.

Naturalist,

OCCURRENCE IN NORTHUMBERLAND OF THE RED-BREASTED FLYCATCHER.

By GEORGE BOLAM,
Berwick-on-Tweed.

On the 5th of October, 1883, I was fortunate enough to shoot a specimen of the Red-breasted Flycatcher (*Muscicapa parva* Bechst.) in our garden in Berwick; and the example is now in my collection. On examination it proved to be a young male, in the sombre brown of the autumnal plumage, and in colouring it agrees generally with the short description given in the last edition of Yarrell's 'British Birds.' The tertials are broadly margined and tipped with pale yellowish brown, and the breast and under parts are more or less of a fine warm buff. The tail, which consists of twelve feathers, is hair brown and white, the brown being darkest on the middle feathers; the first three pairs of quills from the outside are brown and white in nearly equal proportions, the basal halves being white, the tips brown. The fourth pair have the outer web only, white for about an inch near the middle of the feather, with a small portion of the inner web next the shaft of a like colour: while on the fifth pair from the outside the white is confined to a rather narrow margin on a small portion of the outer web. The sixth or centre pair are wholly brown. In the fourth edition of Yarrell's 'British Birds,' above referred to, it is stated that the Red-breasted Flycatcher has only ten feathers in the tail; but Professor Newton informs me that since the account for that work was written, he has found that specimens are met with having twelve feathers: and Mr. John Hancock, to whom I have often been indebted for useful information, at all times most kindly given, tells me that he finds, by examination of a large series of specimens in his collection, that twelve is the normal number of tail feathers in *M. parva*; and that the only specimen he has which has only ten, has evidently lost two. Twelve would therefore seem to be the number of tail feathers in this species, and, unless abnormally, that number probably never varies.

This Flycatcher is quite new to the avifauna of the northern counties of England; in fact it has only on three previous occasions been noticed in the British Islands, once near Falmouth, when two birds were seen and one of them killed, and twice in the Scilly Islands.

Nesting of the Twite on Thorne Waste.—In the Handbook of Yorkshire Vertebrata, page 31, the nesting of the Twite on Thorne Waste, which is only just above sea-level, prior to 1844, is mentioned on the authority of the late Mr. Thomas Allis. You may be interested to know that I found a nest of this bird, with eggs, on the Goole edge of the Waste, on the 26th of April this year. It was placed low down in some heather, overhanging a small cutting from which peat had been cut.—Thomas Bunker.

TEESDALE BOTANY: HISTORICAL AND PERSONAL RECOLLECTIONS.

By JAMES BACKHOUSE.

The original discoverer of most of the botanical rarities of Upper Teesdale was John Binks. He was a miner, who worked in the lead mines near Middleton in Teesdale, very early in the present century. Though in humble life, Binks was an 'observant and intelligent man,' of 'gentlemanly appearance,' apparently 'above his station.' He was described as 'like a little smart French (!) doctor' (or in words to that effect), with a delicately formed and highly intellectual face! utterly unlike 'a working miner.' Owing to the unhealthiness of the occupation, four days only in the week were devoted to mining; the remaining two being taken advantage of for recreation, and for obtaining from the adjacent hills any plants that 'the druggists wanted,' by which a slight addition could be made to his scanty income.

Among these plants, I believe, were the Rose-root (*Sedum Rhodiola*), the Common Juniper, and the 'Bear Berry' (*Arctostaphylos uva-ursi*). The latter he found abundantly on Cronckley Fell.

John Binks loved a good ramble right well, and his powers of endurance were not small. Living in the most frugal way, he could 'rough it' with a pleasure known to comparatively few.

He it was who first found and brought under notice

Potentilla fruticosa L.	*Vaccinium uliginosum* L.
Gentiana verna L.	*Bartsia alpina* L.
Arctostaphylos Uva-ursi Spr.	*Juncus triglumis* L.
Saxifraga Hirculus L.	*Dryas octopetala* L.
Helianthemum canum Dun.	*Malaxis paludosa* Sw.

and the other 'Teesdale rarities' which became known to the botanical world previous to the year 1820.

Binks brought down his treasured discoveries to a clergyman and to a 'doctor,' both of whom resided at Middleton (or Barnard Castle?). These gentlemen sent up the plants, so received, to Sir Jas. E. Smith, and (I have always understood) 'got the personal credit' of the discoveries by so doing.

When my father was young, his health was very delicate: so much so that it seemed questionable whether he would ever reach manhood. The fine air of Teesdale was recommended for him, and he was consequently located for a time, in 1810, with a farmer named Applegarth, at Sledwick, near Barnard Castle. His attention had already been turned to botanical subjects by his elder brother, and by several of his relatives at Darlington and Sunderland; so that the moorland region of Upper Teesdale offered an attraction to him in a

double sense. Casually hearing of John Binks and his love of botany, my father 'borrowed John Applegarth's little black pony,' and rode up to the Middleton lead mine to seek him. A mutual 'arrangement' was soon entered into, and many a fine and wearying ramble they had together; beginning gradually at first, and extending their range as my father's health grew stronger.

There was no 'High Force Hotel' then! and no road up the valley where it now exists, only a narrow moorland lane or track, passing along the northern ridge from Middleton to a farm five or six miles up the valley, called Moor Riggs House, which still exists. So that a journey in that day 'round Micklefell,' *taken from Middleton*, was 'no trifle,' especially when the weather was rough. During these trips John Binks showed to his young companion, in addition to the plants already named, *Epilobium alsinifolium*, *Saxifraga stellaris*, and several other interesting plants, if I may judge from the dates attached to these specimens.

Many years afterwards, when the first figure of *Woodsia* was published, from a specimen found in Scotland, my father instantly recognised it as a fern which he had seen in Teesdale. His botanical friends and relatives 'did not believe it,' but he declared that it was 'certainly there,' and that he would 'go and fetch it.' He did so; and I possess the specimen—a fine example of *Woodsia ilvensis* R. Br., with several fronds (one of which is $3\frac{1}{2}$ inches long)—having the words attached, in his handwriting:—'Foot of Cauldron Snout, Teesdale, 1821, first found there.' *Polystichum Lonchitis* Roth. was apparently gathered about the same time.

I will now mention the plants of Teesdale and the adjoining region, with the discovery of which I have been personally associated.

Hieracium iricum Fries	1842.
H. gothicum Fries	
H. pallidum Fries	
H. anglicum Fries	
H. crocatum Fries	
H. corymbosum Fries	
Poa alpina L.	
P. Parnellii Bab.	
Crepis succisæfolia Tausch	

The above *Hieracia* and *Poa Parnellii* were first examined and virtually found by Prof. C. C. Babington; whom, in company with the late Mr. J. E. Winterbottom, we had the pleasure of (first) meeting at the 'High Force Inn,' during the summer of that year. *H. iricum* was then described as '*H. Lapeyrousii*,' and *H. anglicum* as '*H. Lawsoni*.'

Saxifraga nivalis
S. Hirculus, second station } 1843.
Polemonium cæruleum

The first of these I found. The other two we 'visited': but they had been previously discovered in these stations by a mining inspector.

Alsine stricta (Wahl.), 1844.—To my late friend, Mr. G. S. Gibson, of Saffron Walden, belongs the credit of this discovery. We were together, and I believe saw the plant almost at the same moment; but he first said 'What is that?' *fixing* my attention specially upon it.

Saxifraga umbrosa v. *crenata*.—Two stations for this met with during the same year (on Falcon Clints and near Winch Bridge—the latter doubtless from seed washed down from some higher station). They were apparently the last vestiges in Teesdale. It was probably abundant there at one time; at least so my father believed, from what he heard in that region when he was young. Three new stations for *S. Hirculus*, also *Equisetum pratense* Ehrh. = *E. umbrosum* Willd., were found during the same year, 1844.,

Pyrola secunda L. 1847 or 1848.

Three stations.

Polygala austriaca β *uliginosa* R.
Primula farinosa v. *acaulis* } 1852.
Myosotis rupicola

A second station for the *Myosotis* was found subsequently, I think probably during 1853, though I cannot find a memorandum of the exact date. Its position was 100 ft. or more lower, and some miles distant from the original station on Micklefell. A third station was discovered by my son, William Edward, and myself, many miles distant from both the foregoing, in 1880. The plant is still tolerably abundant in all the three localities. Prof. Babington regards the Teesdale plant as specifically identical with *M. alpestris* Schm. If so, it is very distinct, as a variety, from any that I have seen in, or obtained from, Continental sources.

Viola arenaria DC., 1862, first discovery. I found a second station, ten miles or more distant, many years later. It was growing in this (second) station when again visited in 1880.

Epilobium anagallidifolium Lam.
Saxifr. Hirculus, in 3 new stations on Micklefell } 1872
Equisetum arvense v. *alpestre* Wahl.
Cystopteris alpina

Mr. Richard Potter, of York, first gathered the Cystopteris when with me in Teesdale, where it is well developed and characteristic. So far as I am aware, it is the only known British locality; the 'old

Naturalist,

station' for it, on a wall at Low Leyton, Essex (at best an 'unsatisfactory' locality), having been destroyed many years before. We were only able to find three roots, so that it may well be called 'very rare.'

Some years later when crossing the moors alone, I found another station for *S. Hirculus*. It was growing in vast profusion, covering, more or less, an area probably as large as that of all the other stations I have seen put together. No one, I believe, has visited the locality since. I now know of nine stations for this plant in the Teesdale district. Six out of the nine I have personally discovered.

Senecio spathulæfolius DC. is the last novelty which has 'turned up' in this rich region. I detected it by the peculiar aspect of its rosettes when out of flower, and brought roots home to prove. My friend, Professor Babington, seems certain that it is the above-named species, and that the Holyhead plant, which has long been known under the name of *Cineraria campestris* v. *maritima*, is the same. If so, it is a remarkably interesting illustration of the similarity (in points doubtless 'well understood' by the plants themselves!) of maritime (*i.e.* 'littoral') and Alpine or sub-alpine climates.

The 'Teesdale' plant, though growing at an elevation of probably 1500 feet, cannot apparently exist, except upon a northern slope! Though there is apparently no change in the soil or its grassy covering, yet 'the moment' the slight roll of the hill changes its aspect, the plant ceases altogether. The variation in the incline (to south or north) is so apparently trifling—both receiving full sunshine—that the *atmospheric difference* must be subtle indeed! In 1881, my sons again visited the locality of this plant, and found that it was scattered over a considerable region where the 'roll' of the undulation was northerly.

It may be interesting, in connexion with this subject, to mention that, in eight instances out of the nine, where *Saxifraga Hirculus* grows, it also affects a slight incline, having an aspect due north or very nearly so. In one instance only the trend of the slope is north-west.

West Bank, York, 18. vi. 1884.

Additions to the Dewsbury district-flora.—At the meeting of the Dewsbury Naturalists' Society, on the 10th July, Mr. P. F. Lee, as botanical recorder, reported the following additions to the flora of the district:—*Brassica nigra* (black mustard), *Ranunculus Lenormandi* (the rarer form of the mud crowfoot), *Carex pilulifera* (round-headed sedge), *C. pallescens* (pale sedge), and *C. lævigata* (smooth-stalked beak-sedge). At the same meeting, he gave a racy address on 'insect-eating plants,' illustrated by living specimens and microscopical sections of the digestive process, glands, etc.—J. S.

'THE SEVEN SLEEPERS,' ACCORDING TO MANX TRADITION.

By J. M. JEFFCOTT,

Castletown; Member of the House of Keys; and of the Anthropological Institute of Great Britain and Ireland.

The supposed 'seven sleepers,' in the Manx tongue called *Yn cadlagyn*, were *crammag* = snail; *craitnag* = bat; *cooag* = cuckoo; *cloghan-ny-cleigh* = stonechat; *gollan-geayee* = swallow; *doallag* = dormouse; and *graynoge* = hedgehog.

The term *crammag* is apparently from *cramman* = lump or bulb.

Craitnag has seemingly reference to the wrinkled membrane of which bats' wings are formed. The adjective *craitnagh* = belonging to skin, wrinkled, or like a bat, is from *craitnyn*, the plural of *crackan* = skin.

Cooag is, I believe, an onomatopœia, as is the English word 'cuckoo.' In their aërial gambols cuckoos often utter a sound which '*cooag*' well represents.

Cloghan-ny-cleigh is the wheatear (*Saxicola œnanthe*), often, though improperly, in the Isle of Man called the stonechat. It is a well-known summer migrant, while the stonechat (*Saxicola rubicola*) is a resident species, and is to be seen at all seasons. The *cloghan-ny-cleigh* for the most part frequents upland solitudes. It delights to visit old cairns and tumuli. Its alarm note has been compared to the sound produced by the breaking of stones with a hammer. This note, often uttered as it flits from grave to grave in some ancient and haunted cemetery, has caused this beautiful little bird to be associated with the superstitions which belong to the archaic depositories of the dead.

Gollan-geayee literally means the 'fork of the wind'—a poetic and very beautiful appellation, indicating the form and character of the swallow.

Doallag has reference to the supposed blindness of the dormouse, from *doal* = blind.

Graynoge implies something causing horror.

The erroneous belief that the swallow and cuckoo hibernated in torpidity was formerly very general.

The poet Cowper, in a letter to Joseph Hill of the 6th March, 1794, says, 'I and the swallows shall appear together. They have *slept* all the winter, but I, on the contrary, have been extremely busy.' The same mistaken notion is indicated in the following lines by him:—

'The swallows in their torpid state
Compose their useless wing.'

Naturalist,

The amiable and ingenious naturalist, Gilbert White, concurred in the opinion held by many of his co-temporaries, that at least a part of the swallow tribe spent the winter in torpidity. In reference to the first appearance of sand-martins in the spring, he says: 'It is easy to suppose that they may, like bats and flies, have been awakened by the influence of the sun amidst their secret *latebræ*, where they have spent the uncomfortable foodless months in a torpid state and the profoundest of slumbers.'—Nat. Hist. of Selborne.

Isaac Walton tells us, on the authority of naturalists of his time: 'It is well known that swallows and wagtails, which are called half-year birds, and not seen to fly in England for six months in the year, but about Michaelmas leave us for a better climate; yet some of them that have been left behind their fellows have been found, many thousands at a time, in hollow trees or clay caves, where they have been observed to live and sleep out the whole winter without meat.'

Anacreon had clearer views of the swallows' habits and migrations than Gilbert White. The following lines are from one of the prettiest of his odes:—

Σὺ μὲν, φίλη χελιδων,
ἐτησίη μολοῦσα
θέρει πλέκεις καλιην.
χειμῶνι δ' εἰς ἄφαντος
ἢ Νεῖλον, ἢ 'πὶ Μέμφιν.

'Once in each revolving year,
Gentle bird! we find thee here;
When nature wears her summer vest,
Thou com'st to weave thy simple nest:
But when the chilling winter lowers,
Again thou seek'st the genial bowers
Of Memphis, or the shores of Nile,
Where sunny hours for ever smile.'—MOORE.

The following oft-repeated but ridiculous tale was told me in my boyhood. A cuckoo had adopted as its winter resting place a hole in the dead trunk of a tree. The trunk had been severed, and the hollow section was removed to form a yule-log. It was placed on the *chiollagh*, or fire-place. The bird was, by the heat, awakened from its sleep, and, though denuded of its feathers, emerged from its seclusion, and cheered the company with its vernal song.

Eupœcilia dubitana in Yorkshire.—This very nice addition to the Yorkshire list of Lepidoptera was taken freely by Mr. S. L. Mosley, at Dungeon Wood, Huddersfield, last month (June). Mr. Mosley has very kindly presented me with a series of the specimens.—GEO. T. PORRITT, Huddersfield, July 23rd, 1884.

NOTE ON A DEPOSIT OF LACUSTRINE MARL IN WEST YORKSHIRE.

By G. A. LEBOUR, M.A., F.G.S.,
Professor of Geology in the Durham College of Science, Newcastle-on-Tyne.

It may be interesting to many wandering geologists in West Yorkshire to know that just now there is exposed to view in the Settle district a beautiful example of what was once an upland lake, and is now a patch of lacustrine marl.

Last Easter, whilst engaged on the annual geological week's excursion of this College, we unexpectedly came upon a deposit of white marl, which had evidently only quite recently been broken into and was being dug and gradually carted away for agricultural purposes. The marl was pure white, like crumbly chalk, and was almost entirely made up of fresh-water shells, chiefly of the genera *Limnæa* and *Cyclas*, with some others.

We had not much time at our disposal, and we had no idea that this old lake bottom was unknown to Yorkshire geologists, so we merely marked it down in our maps, noted a few particulars in our books, secured a lump or two of the shell-marl, and went on our way. Since then we have looked up the authorities on West Riding Geology, and find that our little ancient lake is not mentioned by them. Miall's 'Geology of Craven,' Davis & Lees' 'Geology and Botany of the West Riding,' Phillips' quarto classic, and his smaller 'Mountains and Rivers of Yorkshire'—none of these said a word about it. Still it might be well-known to some of the many geologists familiar with that delightful region. But the other day our friend, Professor A. H. Green, of the Yorkshire College, informed us that he had never seen or heard of it. This has decided us to put on record our meagre observations, in order that others may not pass by the spot without extending them, and especially without collecting and identifying the species of the perfectly-preserved but dreadfully friable and fragile shells.

The old lake is easily found. It is four miles north-west of Settle, about half-way between Horton-in-Ribblesdale and Clapham, and occupies the bottom of the Crummach valley between Moughton Fell and Norber. This valley bottom is carved out of hard slaty Silurian rocks, which, close to the marl pit, are seen beautifully polished and grooved *in situ* by ice, and which at Norber close by, have supplied that wonderful assemblage of ice-carried boulders which stand out so black and sharp against the white weathered mountain limestone scars on which they lie. That the lake bottom

was due to a little glacier (the side-feeder of a larger one probably) coming down from Crummach towards Austwick and grinding out a hollow in its course is most likely, though it is possible that a damming of the dale below the lake by glacial detritus may have had something to do with it. Other observers, with more time than we had, will easily decide the point. Among other things their attention should be directed to a thin layer of peaty vegetable matter which divides the white marl, and seems to show that for a period the old lake was dried up. On a small scale the circumstances of many of the miocene lignites of central Europe are here reproduced, though of course, there is no correspondence in age nor in the climatal conditions under which the deposits were formed. The Crummach lake is Post-glacial undoubtedly.

THE YORKSHIRE NATURALISTS' UNION AT HAWES.

The third meeting of the season of the Yorkshire Naturalists' Union, held on the 28th of June, was devoted to Upper Wensleydale, from Hawes as a centre. Mr. F. Arnold Lees, of that place, who acted as local secretary, had prepared an attractive programme, and the elements were propitious. The weather was very fine, sunny, and hot, so that the work on the various routes was cut down by the omission of such portions of the routes as involved unnecessary expenditure of muscular force. Mr. Lees led a party of botanists who took train to Askrigg Station, and from thence worked Bainbridge Gill and Lake Semerwater; while another party of botanists walked from Hawes through Gayle, and over Counterside to Semerwater, a round of eight miles. Mr. William Horne, of Leyburn, led a party to Mill Gill and Whitfield Gill Forces and the adjoining woods, working up stream and then crossing country to Askrigg Station, returning, in company with the previously-mentioned parties, to Hawes by 5.23 train. Other members, conducted by Mr. William Whitwell, of Skipton, and the Rev. G. P. Harris, M.A., vicar of Hawes, investigated Cotterdale, Mossdale, and Appersett; and yet another body—ornithologically inclined—made the ascent of Great Shunnor Fell.

Tea having been served at the Crown Inn, Hawes, the meetings, both sectional and general, were held in the National Schoolroom, the chair of the latter being occupied by Mr. Washington Teasdale, F.R.M.S., of Leeds, in the absence of all the vice-presidents. There were about fifty members present, representing fifteen of the forty societies which the Union includes—viz., Heckmondwike, Liversedge, Bradford (3 societies), Leeds (3), Goole, York, Selby, Dewsbury, Keighley, Ripon, and Scarborough. The Hull Great Thornton Street Wesleyan Field Naturalists' Society, with thirty members, was admitted into the Union, and the following new members were elected:—Messrs. R. B. Mackie, M.P., Wakefield; Percy Lund, Ilkley; C. S. Irvine, Leeds; James Booth, F.G.S., Ovenden Grange; John Clayton, Bradford; A. R. Waller, York; Rev. T. Milville Raven, M.A., F.R.S.E., Vicar of Crakehall; Rev. R. V. Taylor, B.A., Vicar of Melbecks, near Richmond; John Henry Metcalfe, Leyburn; E. D. Swarbreck, Bedale; Seth Ward, Dewsbury; Rev. G. P. Harris, M.A., Vicar of Hawes; and William Horne, Leyburn. After the thanks of the meeting had been voted to Mr. F. Arnold Lees for his efficient services as local secretary, to the Rev. G. P. Harris for the use of the schoolroom, and to these two gentlemen and Messrs.

Horne and Whitwell for acting as guides during the day, the reports of the Sections on the day's investigations were given.

The Entomological section was first on the list, and the Rev. G. P. Harris reported, he and Messrs. J. H. Rowntree and B. Illingworth having taken charge of the section in the absence of its officers. Very little had been done, the list of captures including *Pieris brassicæ*, *P. rapæ*, *P. napi*, males of *Anthocharis cardamines*, *Vanessa urticæ*, *V. Atalanta*, *V. cardui*, *Chortobius Pamphilus*, *Lycæna Alexis*, *Vanessa Io* (larvæ), *Melanippe montanata* (common), *Coremia munitata* (one), *Hepialus hectus* (pupa-shells), and *H. humuli* (plentiful). The vicar stated that *Venusia cambricaria* was not uncommon near Hawes, though he had not taken it of recent years.

The secretary of the Botanical section, Mr. P. F. Lee, of Dewsbury, reported the observations of the various parties who had visited Mill Gill Force, Askrigg, Semerwater, Gayledale, &c. Owing to the excessive heat of the day, and the general dryness of the season, the sphagnums and mosses presented little but dried-up remains, while the flowering plants and ferns too seemed to hide away in the more exposed situations. The charm, though, of the rare and varied flora of the margin of Semerwater, and of the banks of the stream from there down to Bainbridge, made ample amends for any short-comings of the other districts visited during the day. By the lake side were *Ranunculus cæspitosus* (the mud form of *R. aquatilis*), *Polygonum viviparum*, *Salix phylicifolia* (the tea-leaved willow), *Carex acuta*, *Primula farinosa*, and *Blysmus compressus*. The best among the many good things bagged at the other parts of this alpine district, were—*Trollius europæus*, *Actæa spicata*, *Viola arenaria*, *Cardamine amara*, *Stellaria nemorum*, *Geum intermedium*, *Saxifraga aizoides*, *Galium sylvestre*, *Carduus heterophyllus*, *Melica nutans*, and *Asplenium viride*. Altogether 238 species were noted. Mr. F. Arnold Lees stated that during the past day or two he had observed about 250 plants in bloom or fruit in the district, and he considered the number just given a fair day's work. He also said that *Viola arenaria* had been discovered by him a little while ago, and that it was new to Yorkshire. [Since the excursion, Mr. Lees has verified the occurrence of '*Melampyrum sylvaticum* L. on south-west side of Whitfield Gill, above the main fall'].

Mr. J. E. Wilson, of Bradford, secretary of the Geological section, reported on the geological observations made during the day.

For Vertebrate Zoology, Mr. James Backhouse, junr., of York, secretary of the section, stated that most of the birds found nesting by Mr. F. Arnold Lees, and mentioned in the programme of the meeting, were observed with one or two exceptions, the actual numbers being 29 resident species and 16 summer migrants. Of the former the Dipper, Grey Wagtail, Red Grouse, Curlew, and Golden Plover may be mentioned, and the Redstart, Whinchat, Ring Ousel (nesting), Lesser Whitethroat, and Sandpiper of the latter. An interesting spectacle was witnessed by several members in the stream below Whitfield Gill force, a Mole being observed swimming across the water at only some two or three feet from the spectators, who watched its movements for some time. The only reptile of note was the Viviparous Lizard, seen in the Buttertubs Pass.

In the absence of the officers of the Conchological section, Mr. W. Denison Roebuck, F.L.S., Leeds, reported on the observations made by himself and by Messrs. Baker Hudson, and William Coates, of Middlesbrough. The total number of forms observed was 23 species and 3 varieties; two species being additions to the recorded fauna of Upper Wensleydale. These were *Limax lævis*, Whitfield Gill, and *Pupa marginata*, found by Mr. Hudson close to Hawes Church. The smallness of the number seen was due to the intensely hot and dry character of the day (and season, for next to no rain had fallen for three months); though, as regards this, it was somewhat curious to note that of specially damp-loving forms *Limax lævis*, new to the list, was found, and *L. arborum* was common in Whit Gill, a locality where it had not before been noticed; several other kinds of slugs occurred, and also *Succinea putris* and *Zonites fulvus*. The other species worthy of mention were *Helix sericea*, *Clausilia laminata*, *C. dubia*, and *Cochlicopa tridens*, all found at Aysgarth by Messrs. Hudson and Coates, and *Anodonta anatina*, brought by Mr. F. Arnold Lees from Semerwater. A vote of thanks to the chairman concluded the meeting.—W. D. R., W. E. C.

. Naturalist,

Breeding of the Hawfinch in Durham and Northumberland.—Through the kindness of Mr. H. T. Archer, of Newcastle, and Mr. Thomas Thompson, of Winlaton, I have pleasure in recording a northward extension of the breeding range of this bird, a nest having been found this year in each of these counties. In Durham, a nest containing two eggs was found in an oak, fifty feet from the ground, on the 29th of May, and in Northumberland, one near Riding Mill on Tyne, in a pear tree, about five feet from the ground, also contained eggs, all but one of which were broken by some unknown means. Both nests and the eggs are now in Mr. Thompson's collection.

This record is of great interest, as the Hawfinch is a species which, like the Missel-thrush of old and the Stock-dove, Nightingale, and others, at the present day, is slowly, but surely, extending its range northwards. A retrospect of its position as a British bird shows that in 1839 Yarrell noted it as a resident in some numbers locally in the south of England, and as having occurred casually elsewhere. Macgillivray (1840) said it was a winter visitant, 'individuals' being permanently resident, especially in the vicinity of Epping Forest. From the days of the first edition of Yarrell and of Macgillivray down to the present, we are able to trace in the succeeding works on British ornithology, its gradual diffusion as a resident throughout the southern and central counties of England, northwards to and including Yorkshire. This county, however, has hitherto formed the northern limit to its range during the breeding season, and a reference to Mr. John Hancock's authoritative work on the 'Birds of Northumberland and Durham' (1874), informs us that in those counties the Hawfinch was a rare casual visitant, not known to breed.—Wm. Eagle Clarke, July, 1884.

Additions to the Avifauna of Washburndale—On the 31st of August, 1883, whilst fishing in Fewston Reservoir, I saw an Oyster-catcher on the south side, near to the small streamlet known as Thackeray Beck. The bird was very shy, not allowing me to approach it, but by sending a man round to drive it from its feeding ground, and concealing myself behind some trees where it was likely to pass, I soon got a shot at it. It proved to be a mature bird in good plumage, and was well fed and in good condition. You may be also interested to know that on the 7th of September, 1883, an Arctic Tern in its first year's plumage was picked up dead on Blubberhouses Moor. On the 4th and 5th, the wind had been blowing strong from the west, and the bird may have been driven before it from the West Coast.—Walsingham.

—Since the publication of the list of birds of Washburndale, in last year's 'Naturalist,' (1883, page 12), I have observed the following species in the district, their occurrence being chiefly interesting as additions to the list:—the Linnet (*Linota cannabina*), the Black-headed Gull (*Larus ridibundus*), and the Common Gull (*L. canus*), the two latter species being observed on Fewston reservoir in early June this year. In January last, the Goldeneye was not uncommon on the reservoir, and among the party were several old males, which is especially worthy of note, since mature birds of this species are always considered rare in the county.—William Eagle Clarke, July, 1884.

Great Tit and Bees.—A Great Tit has this year nested and reared her young in one of the boxes I have near the garden, and when the young ones were a few days old I found the parents were feeding them on bees. They visited the hives every few minutes, settling on the stone in front of the hive, and taking a bee, flew off to the box. Having plenty of bees, and being fond of the Tits, I own I was pleased to see the performance, but often wondered how the young birds swallowed the insects without getting the stings into either their mouths or throats.—J. Whitaker, Rainworth Lodge, near Mansfield, Notts.

Spring Birds near Mansfield.—The arrival of spring birds this year has been a little later than the average, and many of them in smaller numbers, especially Chiffchaffs; and about here, where we have usually forty or fifty pairs, we have this year only three pairs. Cuckoos and Corncrakes are scarce; but there are more Willow Wrens and Hedge Warblers than I ever remember; and Turtle Doves are well represented: on May 10th I saw thirty-one in a flock. After seven years' absence the Garden Warbler is again visiting us, and we have five or six pairs about, but I am sorry to say there are no Nightingales.—J. Whitaker.

Unio pictorum at Ossington, Notts.—Some time ago I determined to explore the 'Lake' at Ossington, having heard that the water had been run off for cleaning out purposes. I knew it was a case of 'now or never,' so set out to hunt for shells yesterday (26th June). I found the whole of the muddy bottom exposed, four and a half feet of as sticky a mass of filth as ever a man stuck fast in, no water weed, and only two species of shells to be found, *Anodonta cygnea* and *Unio pictorum*. These, near the sides at the lower end, were lying in and out of the mud by hundreds, but the getting them was no agreeable task, off boots, &c., and into the mud, knee-deep at the first step! So I went no further, but raked in the shells by means of the scoop. The *Anodons* were all of the type form, and moderately large. The finest I got out was $6\frac{1}{8}$ in. by $3\frac{1}{4}$ in. by 2 in., another, rather more ventricose, measured 6 in. by 3 in. by $2\frac{1}{4}$ in. There were a few specimens, apparently larger, out of reach. The *Unios* were monsters; the largest I procured is $4\frac{13}{16}$ in. by $2\frac{1}{4}$ in. by $1\frac{5}{8}$ in. I got a good quantity of fine specimens of these shells, but saw no others, not even *Limnæa peregra*.—W. Gain, Tuxford, Newark, June 27th, 1884.

Paludina contecta in East Yorkshire.—In June of this year I found several living specimens in a small tributary of the Derwent between Breighton and Wressle, thus again firmly establishing it as a member of the Yorkshire fauna. It formerly occurred in the immediate neighbourhood of York, but appears now to be extinct there; and the specimens from Askern are merely subfossil shells of a dwarfed form, occasionally turned up by the moles. In 1883, my friend, Mr. Clarke, found a single dead example in the county, just upon the border of Lincolnshire. It is, therefore, interesting to ascertain that it still exists in a living state in the county.—Wm. Nelson, Leeds, July 15th, 1884.

Slugs in County Durham.—So little attention has been paid to these animals that a record of specimens recently collected in one of our northern counties will be interesting. Mr. Baker Hudson, of Middlesbrough, when staying at Durham in April, sent me a large number of the common slugs he met with. These included several specimens of the Tree-slug (*Lehmannia arborum*), found on the roots and boles of beech trees near the city; of *Limax maximus* var. *cellaria*, which were of large size, and were the usual form of the district, found in many places. Of *Limax agrestis*, the Field-slug, the specimens sent were of several varieties. Of the type (described as '*cinereus*, *immaculatus*,' by Lessona) there was but one, the prevalent form being the irregularly maculated one which answers to Moquin's description of his variety *sylvatica*, but which should, probably, have been considered the type; there were also a specimen of var. *albida*, pure white, from a lane near Old Elvet, and a very dark sepia-brown individual, almost black, referable to var. *tristis*. Of the Arions there were numerous and very puzzling specimens. The most remarkable was an unsymmetrically marked example (from a coppice at Kelly mill) of *Arion ater* var. *rufa*; this had on the left side a very dark broad length-stripe, while on the right side of the animal there was but the faintest shadow of a band. There were other and adult specimens of this variety, and of the usual black type of the species. Of var. *marginata* there were three, and of *Arion hortensis* there were numerous and very variable examples, including the typical form. In June, Mr. Hudson was in Upper Teesdale, whence he sent me a specimen of *Lehmannia arborum*, taken on a wall behind a cluster of hazels, near Middleton, on the Durham side of the Tees.—Wm. Denison Roebuck, Leeds, June 23rd, 1884.

Zonites radiatulus var. viridescenti-alba in West Yorkshire.—Yorkshire appears to be very fortunate in possessing habitats for this rare variety, Mr. Whitwham having found it near Huddersfield, and Mr. W. West at Shipley Glen near Bradford. To these localities I am able to add a third, having found it at Crossgates, near Leeds, during January of the present year.—Wm. Nelson, Leeds, July 15th, 1884.

Naturalist,

Æcidium pimpinellæ var. apii.—On Bank Holiday last (June 2nd), my friend Mr. E. Peak and I had an enjoyable botanical ramble on the Lincolnshire coast, where, amongst other things, we found several interesting fungi, Mr. Peak being fortunate enough to find, near Cleethorpes, an *Æcidium* on *Apium graveolens* which was new to both of us. Finding no record of it, I sent a specimen to Dr. M. C. Cooke, who kindly named it as above, observing, 'It has been said that it never grows on *Apium graveolens*,' and at his request I have since sent him specimens of it for the herbarium at Kew Gardens.

On the 21st June, accompanied by Mr. Peak, I succeeded in finding the same fungus on this side of the Humber, near to Hedon, but it was not by any means common.

The beautiful *Æcidium statices* was plentiful on the leaves of *Statice limonium* on the Lincolnshire coast, and there were great quantities of *Spergularia marina*, almost every leaf of which was dotted with *Cystopus Lepigoni*. *S. marina* was not so plentiful near here, but almost every plant of it was more or less affected with the 'white rust.'—Thos. Dennis, Hull.

Manchester Cryptogamic Society.—At the meeting on the 16th of June, Dr. B. Carrington, F.R.S.E., in the chair, the secretary (Mr. Thomas Rogers), exhibited specimens of *Tortula mucronata* in fruit, and *Campylopus paradoxus*, collected by Mr. Boswell in South Wales, and *Bryum turbinatum* from Oxfordshire. Mr. George Buyers having spent a few days during Whit week in the lake district, had the good fortune to find *Hedwigidium imberbe*, this being the first time of record for an English county. Mr. G. Stabler sent specimens of the rare *Jungermannia Helleriana*, collected by Mr. Michie at Balmoral, being the second station recorded. Mr. G. A. Holt sent several rare mosses, recently collected, amongst them *Philonotis rigida* from the Isle of Man, and *Lejeunea calcarea* from Miller's Dale, Derbyshire. Mr. W. H. Pearson exhibited and distributed specimens of the rare *Coscinodon cribrosus*, recently collected by Mr. Sunderland and himself at Coniston. Mr. W. Forster exhibited a beautiful variety of *Scolopendrium vulgare*, the fronds being generally of a pale yellow, with stripes of bright green between the lateral veins from the mid-rib. He had sown spires of a variegated form, but the plant he raised did not show variegation until the third year of its growth.—Thomas Rogers, Sec.

Physcomitrium pyriforme.—A few days ago, whilst rambling down the course of a stream running eastwards through the deep valley to the south of Thornhill Edge, I gathered a few tufts of this pretty moss in full fruit. They were growing on the bare clay forming the banks of the stream, which rise about eighteen inches above its bed. This, I believe, is the first time this interesting moss has been recorded for this portion of the 'Colne-with-Calder' district.—C. P. Hobkirk, Dewsbury, July 7th, 1884.

Rosa tomentosa in Notts.—A few days ago I found a fine plant in full bloom near Sutton-on-Trent. I have never seen this species before.—W. Gain, Tuxford, June 27th, 1884.

[Mr. Gain sent us a specimen, which we have sent to the Botanical Locality Record Club. Mr. Lees has since favoured us with the following critical notes on the specimen.—Eds.]

—This is var. b of the old aggregate *villosa* of Hudson's 'Flora Anglica,' Ed. 2. It is now known as *Rosa tomentosa* Sm., and is mainly distinguished from *R. villosa* L. (which is *R. mollissima* Willd.) by the more curved and stouter broader-based prickles and pinnated sepals. The fruit varies in shape and armature. The leaves vary, too, from very downy on both sides to glandulous and nearly glabrous. This Trent-side plant appears to approach the var. *sub-globosa* Sm., of Baker's monograph. It is, truly, less common in the south and east than in the north, but ranges from Devon and Wight to Caithness. Both I myself and the Rev. W. Fowler have gathered it in several parts of Lincolnshire, and near Torksey, but the flora of Notts, as modern botanists know it, taking especial note of critical 'splits,' still needs working out, and lists verified by authority as to names would be valuable. *Rosa* '*tomentosa*,' as distinct from *R.* '*villosa*,' is given as 'frequent' in Howitt's 'Notts Flora' (1839), and stands recorded likewise for county 56 in Watson's 'Topographical Botany.'—F. A. Lees.

BOOK NOTICES.

'A List of the Diurnal Birds of Prey, with references and annotations; also a record of specimens in the Norfolk and Norwich Museum,' By John Henry Gurney (London: Van Voorst, 1884).

This is a complete enumeration of the known species and sub-species of the order Accipitres, arranged according to the author's own views on the important subject of classification. In addition to its usefulness as a list, other valuable features are added in the shape of references to the works in which various species are described and figured, or where an account of their habits and geographical distribution may be found; and, as appendices, a series of notes on critical and little-known species. The book also contains a reference under each species to the author's articles contributed to the 'Ibis,' which is, to our mind, an honourable memento of Mr. Gurney's ornithological usefulness; and a list of specimens and skeletons of the group contained in the magnificent collection in the Norwich Museum. As the production of a master, for Mr. Gurney is admittedly the highest authority on the subject, it is indispensable to those studying this most interesting order, and should find its place in the libraries of all who seriously take up ornithology as a science.

'The Ferns of York, including also Nidderdale, and the districts around Thirsk, Scarbro', and Whitby.—By Henry Ibbotson. Edited by B. B. Le Tall, M.A., and Alfred R. Waller (York, 1884).

Under this title is published a very complete—not to say elaborate and detailed—account of the ferns, lycopods, and horsetails of a considerable portion of Yorkshire. By way of appendix is given a table of heights, and also a table of the chief localities for ferns near York, indicating what species occur at each place. The enumeration of species includes 31 ferns, 5 clubmosses or lycopods, 1 pillwort, and 6 horsetails. In their preface the editors trust that their work 'will not fall into the hands of any whose object it is, for "filthy lucre's sake," to root out and exterminate,' as it is 'not the work of any true lover of nature so to do.' These words we thoroughly endorse, looking, as we do, upon the dealer in ferns as one of the curses of modern civilization. We would also hint to lovers of nature the desirability not only of avoiding these gentry, but also of dealing in a sparing manner with such of these beautiful objects as they may themselves chance to meet with. It is not so much that the fern roots taken by any one individual are of consequence in themselves, as that the recurrence of similar thoughtlessness on the part of many individuals tends in the long run to thin out, or even exterminate, the species of less frequent occurrence with us. The professional exterminator needs to be dealt with somewhat severely, and we for our own part should be heartily glad if it were found feasible to place ferns and orchids, nay even primroses, &c., under legislative protection.

NOTES AND NEWS.

Members of local scientific societies who intend participating in the British Association Meeting at Montreal, and who may wish to attend the Conference of Representatives of Local Scientific Societies which will be arranged during the same week, should send in their names at once to Mr. W. Whitaker, 33, East Park Terrace, Southampton, or—after August 12th—Reception Room, British Association, Montreal.

The following north-countrymen were elected members of the British Ornithologists' Union, at the anniversary meeting held in London last May:—Joseph Whitaker, Rainworth Lodge near Mansfield; C. J. Holdsworth, Wilmslow, Cheshire; J. G. Goodchild, of the Geological Survey; H. Heywood Jones, Liverpool; and Abel Chapman, Sunderland.

Dr. Jeffreys has parted with the whole of his collections of British Mollusca to the United States Government, and they will find their final resting-place at Washington. How a collection so indispensable to British conchologists, so rich in the types from which British forms have been described, should ever have been permitted to leave the country, is incomprehensible to us, and not only conchologists, but all British naturalists will share in the disappointment which one cannot but express.

An important gathering of zoologists took place at the British Museum, on the 2nd of July, to meet Dr. Elliot Coues, the distinguished American ornithologist, and confer with him as to the desirability or otherwise of engrafting upon the existing Linnean binomial system of nomenclature a trinomial system to meet certain exigencies. The American ornithologists have already done this, and their line of argumentation is to the effect that while the binomial nomenclature in its strict application was admirably suited to the Linnean notion of what constituted a species, our altered views on the latter point rendered it desirable to adopt some method by which geographical races, or subspecies, having a range adjacent to but not identical with that of what may be called the primary species, may be designated so as to show at once their true affinities. Thus *Turdus migratorius propinquus* is a geographical race closely allied to *T. migratorius*, but having a distinct distribution. Were it called '*T. propinquus*' its affinities would be totally obscured. On the other hand, to call it simply *T. migratorius* would be to ignore its difference from the type. It will be seen from this that it is not proposed to use the new system to a very large extent, and, in point of fact, its American advocates deprecate its application to other than geographical subspecies—subspecies whose 'variation' is 'according to conditions of physical environment, using this term in its largest sense, to cover all those exterior influences which exert a modifying influence upon animal organisms.' The conference was attended by a large number of British zoologists, including such well-known men as Professor Flower (who presided), Dr. Günther, Professor F. J. Bell, Dr. P. L. Sclater, Dr. Woodward, Lord Walsingham, Mr. R. B. Sharpe, Mr. Blandford, Dr. Sharp, Dr. Traquair, Mr. H. T. Wharton, Mr. Howard Saunders, Mr. Seebohm, and Mr. J. E. Harting; and, as might be expected, there were some divergences of opinion. But on the whole the majority seemed disposed to accept the adoption of the proposed system, with certain limitations. Full details of the conference are given in recent numbers of the *Field* and *Nature*; and Dr. Coues' views are fully expressed in his address to the National Academy of Sciences, which is contained in the July number of the *Zoologist*.

This year's list of the 15 newly-elected Fellows of the Royal Society includes a somewhat large percentage of men from the northern counties. The colleges of science are represented by four professors or lecturers; Owens College at Manchester by Professor Morrison Watson, M.D., and Arthur Ransome, M.D.; the Yorkshire College by Professor A. W. Rücker, M.A.; and the Newcastle College by Professor A. S. Herschell, M.A., F.R.A.S. Independent scientific research is represented by Mr. Wilfrid H. Hudleston, M.A., the well-known Yorkshire geologist, and by Mr. Joseph Baxendell, F.R.A.S., of Manchester.

Among the honours conferred upon northern workers during the past few months it is gratifying to note that the Geological Society of London have shown their appreciation of the value of the researches which Mr. Martin Simpson of Whitby has made among the Jurassic rocks, especially upon the classification and distribution of the Ammonitidæ, by awarding to him the balance of the proceeds of the Murchison Geological Fund.

In like manner the Linnean Society have marked their recognition of the sound and useful character of work done in the investigation of the Flora of the English Lake District, by electing Mr. William Hodgson one of their Associates (a class limited to twenty-five in number).

Our bryologists will soon be able to possess the second edition of Mr. C. P. Hobkirk's 'Synopsis of British Mosses,' which is to be published by Lovell Reeve & Co. It has been entirely revised and completely re-arranged, and will contain all the species (numbering 576) and varieties known as occurring in Britain up to date.

The Chester Society of Natural Science is about to publish a list of the Lepidoptera of Cheshire, west of Warrington, Flintshire, and Denbighshire; and the secretary, Mr. A. O. Walker, F.L.S., will be glad to receive marked lists from all entomologists who have collected in the district. It is of importance that the records of the rarer species should be accompanied with particulars as to locality and date, and that the occurrences be well authenticated. These we shall be glad to note in the *Naturalist*.

The handsome, striking and massive new building of the Natural History Museum at Newcastle-on-Tyne, erected at a cost of £40,000, the whole of which has been subscribed by residents in the district, is fast approaching completion, and is to be opened by the Prince of Wales about the end of August. The building is of stone, and stands in its own grounds at the north end of the town. Enriched as it has been by the labours of the men who made the scientific fame of Newcastle, and particularly fortunate in possessing the magnificent collection of birds presented by Mr. John Hancock, most of them preserved by himself, and the equally valuable collection of shells formed by the late Joshua Alder, the Museum will take high rank among similar institutions.

RAINFALL FOR JUNE 1884.

STATION & OBSERVER.	Height of Rain-Gauge above Sea-level.	Total Rainfall for Month.	No. of Days on which Rain fell.	Total Fall to Date.				Heaviest Single Day's Fall.	
				In 1884.	Average of Past Years.	No. of Years.	Years of Average.	Amount.	Date.
	Feet.	Inches	Days	Inches.	Inches.	No.	Years.	Inches	
Derringham, Hull.—Wm. Lawton	10	0·82	7	9·01	9·21	34	1850-83	0·48	6th.
Goole.—John Harrison...	25	0·58	6	8·82	10·55	9	1875-83	0·25	8th.
Scarborough.—Allan Rowntree	130	0·47	9	9·91	11·40	18	—	0·20	8th.
Baldersby, Thirsk.—W. Gregson	100	1·09	8	12·47	—	—	—	0·36	5th.
Masham.—Thos. Carter..	269	0·89	9	14·92	—	—	—	0·33	5th.
Shadwell, Leeds.—Geo. Paul	500	1·08	9	12·80	—	—	—	0·34	8th.
Leeds.—The Museum ..	183	0·74	12	11·10	10·63	30	{1853-62 / 1865-84}	0·26	7th.
Horsforth.—James Fox	350	1·16	9	12·24	14·08	15	1870-84	0·41	7th.
Barnsley.—Dr. Sadler...	350	1·38	10	11·60	12·98	1	1883	0·82	7th.
Wentworth Castle.—Mr. Fisher	520	1·33	10	12·72	15·56	1	1883	0·62	7th.
Ingbirchworth.—Mr. Taylor	853	2·09	12	18·91	19·58	1	1883	0·82	7th.
Dalton, Huddersfld.—J. W. Robson	350	0·90	9	13·33	14·67	18	1866-83	0·38	8th.
Thorpe, Halifax.—F. G. S. Rawson	365	1·30	10	18·64	—	—	—	0·34	7th.

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AND

WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

Contents:

PAGE

THE MARINE SHELLS OF YORKSHIRE—*Rev. W. C. Hey, M.A.* 25

WILD CAT IN LINCOLNSHIRE—*John Cordeaux* 33

A NEW VARIETY OF COW-WHEAT—*G. Claridge Druce, F.L.S.* 35

MICRO-PALÆONTOLOGY OF THE NORTHERN CARBONIFEROUS SHALES (I. INTRODUCTION: FORAMINIFERA, &C.)—*G. R. Vine* 37

COLEOPTERA OF LIVERPOOL DISTRICT (PART 4: BRACHELYTRA)—*J. W. Ellis, L.R.C.P., &c.* 45

YORKSHIRE NATURALISTS' UNION AT HELMSLEY 40

MAMMALIAN NOTES:— 34
Badger near Barnsley—*W. E. Brady.*

ORNITHOLOGICAL NOTES:— 32
Hawfinch in Cumberland—*Rev. H. A. Macpherson, M.A.*; Garganey in Cumberland—*Id.*; Nesting of the Quail in Wensleydale—*John Percival*; Woodcock breeding in Nidderdale—*W. Storey*; Thick-knee and Temminck's Stint in Lincolnshire—*Rev. W. W. Fowler, M.A., F.L.S.*; Smew in Cumberland—*Rev. H. A. Macpherson, M.A.*; Little Gull at Whitby—*J. Backhouse, Jun.*

CONCHOLOGICAL NOTES:— 31
Marine Shells at Mablethorpe—*W. Gain*

ENTOMOLOGICAL NOTES:— 42
Heliothis peltigera at Wallasey—*J. W. Ellis*; Phycis betulella near Doncaster—*G. T. Porritt, F.L.S.*; Lepidoptera at Windermere—*E. P. P. Butterfield*; Lepidoptera near Bingley—*Id.*; Agdistes Bennettii at Redcar—*G. T. Porritt, F.L.S.*

BOTANICAL NOTES:— 36
Manchester Cryptogamic Society; Mosses, &c., at Sherburn-in-Elmete—*M. B. Slater*; Some good Surrey plants—*P. F. Lee.*

MISCELLANEOUS NOTES 34
Etymology of Spurn and Ravenspurn—*Rev. E. Maule Cole, M.A.*

BOOK NOTICES (Report on the Migration of Birds in 1883) 43

NOTES AND NEWS 43

RAINFALL 44

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1884.

The NATURALIST.

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BOOKS RECEIVED.

Revue Bryologique, 1884, Nos. 1, 2, 3, 4. [From the Editor.]

The Student's Flora of the British Islands.—By Sir J. D. Hooker.—3rd Edition, 1884. [Publishers.]

The Auk, a Quarterly Journal of [American] Ornithology.—Edited by J. A. Allen. Nos. 1, 2, 3, Jan.–July, 1884. [The Editor.]

* On the Breccia-gashes of the Durham Coast, and some recent Earth-shakes at Sunderland.—By Prof. G. A. Lebour.—Reprint, 8vo, 10 pp. and 2 plates. [The Author.]

* On a Great Fault at Annstead, in North Northumberland.—By Prof. G. A. Lebour.—8vo, reprint, 1884, 12 pp. and plate. [Author.]

Grevillea, a quarterly record of Cryptogamic Botany, No. 65, Sept. [Editor.]

Memoirs marked * will be noticed in our Annual Bibliography of the Literature of the Physical Features and Natural History of the North of England.

EXCHANGES.

Notices of Exchange inserted free of charge to Subscribers.

Duplicates.—*Velleda, Statices, Progemmaria var. fuscata, Cæsiata, Cerago, Connexa, Typhæ.* Desiderata.—Numerous macro-lepidoptera; also types of most *Deltoides* and *Pterophori*.—Wm. E. Brady, 1, Queen Street, Barnsley.

Duplicates.—*Populeti*, Autumnaria*, Senex, Typhæ*, Unca, Mesomella, Lignata, Antiqua*, Biundularia, Hectus, Vespertaria, Immanata, Ocellata, Diluta, Albulata, Testata, Perla, Boreata, &c.* Desiderata.—Very numerous.—R. Dutton, 13, St. Saviourgate, York. * Signifies 'Bred.'

Duplicates.—*Anodonta cygnea, A. anatina, Unio tumidus, U. pictorum, Paludina vivipara, Limnæa stagnalis, L. glabra, Planorbis corneus, P. contortus, P. nautileus, &c.* Desiderata.—Other Land and Fresh Water Shells.—R. Dutton, 13, St. Saviourgate, York.

Plants.—Duplicates of Nos. (L.C. 8th edit.) 7, 40, 41, 131, 270, 273, 274, 275, 280, 374, 398, 568, 572, 587, 594, 813, 823, 856, 858, 998, 999, 1,008, 1,031, 1,039, 1,040, 1,261, 1,265, 1,280, 1,282, 1,283, 1,296, 1,305, 1,325, 1,327, 1,330, 1,334, &c. Send lists to H. Goss, Berrylands, Surbiton, Surrey.

Transactions of the Huddersfield Naturalists' Society for those of other Societies.—S. L. Mosley, Hon. Sec., Beaumont Park Museum, Huddersfield.

THE MARINE SHELLS OF YORKSHIRE.

By the Rev. W. C. HEY, M.A.,

St. Olave's Vicarage, York; President of the Conchological Section of the Yorkshire Naturalists' Union.

The land and freshwater shells of Yorkshire have been carefully studied by numerous collectors in different parts of the county, and the importance of recording exact localities has been fully recognised. Of the Marine Shells, in spite of the indefatigable labours of Bean and Leckenby, there is still much lack of definite and collected information. The present paper indeed professes to be no more than a contribution in the direction of the formation of a complete and elaborate catalogue, which surely ought to be looked for at no very distant period. I intend, therefore, in the following list, to give, as a rule, merely my own personal observations, but to make them as accurate, full, and exact as possible.

The Yorkshire coast presents a fertile field for conchological research, owing to its very varied character. To begin with, we have some almost unequalled sandy beaches—the chosen haunt of so many species of bivalves. From Redcar to Saltburn, from Filey to Speeton, and from Sewerby southwards, immense sand reaches occur, where *Solens*, *Mactras*, and many other kinds of shells find a most congenial habitat. Even more prolific in molluscs, though hardly so pleasant to the collector, are the mudflats which border the mouth of the River Tees, and the similar tracts of ground occurring in the various harbours.

The flat expanses of shore-rocks, called 'Scars,' on the Yorkshire coast, are both numerous and extensive, and are, as everybody knows, the habitat of a large group of shells, both univalve and bivalve. On the south side of Flamborough Head the chalk occupies a wide area. For many miles south of Scarborough the shore consists of flat scars of the gray (or Scarborough) limestone, or of the upper sandstone series—these last occurring again in a similar way north of the Castle Hill. Beds of the Upper Lias form the curiously smooth surface between tide-marks near Whitby, and below Huntcliffe we have an equally extensive display of the lower beds. But richest of all our rocks to the marine zoologist, are the long reefs which are only exposed to any extent at spring tides, namely, Filey Brig, and the well-known Redcar reefs, East Scar, West Scar, and Salt Scar.

Two other forms of sea-frontage (if I may coin such a compound) occur on our coast—the rugged and broken cliffs, whose foot the retiring waves scarcely expose even at the lowest tides, and the

almost perpendicular and deeply cave-pierced cliffs of Flamborough Head. The former style of coast-line (well exemplified just north of Filey Brig) is very unpropitious to life, owing doubtless to the fierce and sweeping dash of the waves. A dwarf species of periwinkle and a rough-ribbed limpet have it pretty well to themselves.

The caves of Flamborough Head, too, much as they will delight the lover of nature with the dazzle of their white walls, the dimness of their long recesses, and the unearthly flash of their crystal water, as each wave rises and sinks like the very pulse of the sea, will certainly disappoint the zoölogist who has seen or read of the wonderful riches of the caves of the Channel Islands. For some reason, they are almost devoid of life, and, indeed, the spotless appearance of their floors would quite justify a superstition that they are daily swept and scoured by the mermaids.

Dredging near shore does not produce much which cannot be obtained equally well after rough weather on the beach; one must go far to sea—further than the ordinary collector will care to venture (or the ordinary pocket afford!)—to obtain the rare shells which, on Bean's authority, are so often labelled 'Scarborough.' In those spots which look pleasant for a little quiet dredging (such as Bridlington Bay) there is no depth of water. Some of the deepwater shells may, however, be obtained from the fishing boats, and it is almost always worth while to examine both the lines and the bottom of the boats.

Before concluding these introductory remarks, I may add that any person wishing to form a collection of Yorkshire Marine Shells should unquestionably select Redcar as his headquarters, for here occurs the greatest variety of ground, and a corresponding richness of fauna. The sandy beach of Coatham, the mudflats of the Tees, the long reefs of Lias in front of Redcar, are all rich in marine life, while, after a rough sea, the shore is often one vast collection of marine spoils.

PHOLADIDÆ.

Xylophaga dorsalis Turton.

Not, I believe, indigenous to the Yorkshire coast, but it has occurred in drift-wood, picked up by a friend of mine near Saltburn.

Pholas candida L.

Fairly abundant in the softer parts of the upper sandstone series, which occur as flat scars near low-water mark on the North shore at Scarborough, but the specimens are only small. I have found larger valves (dead) washed ashore at Bridlington Quay.

Pholas crispata L.

An abundant species on the Yorkshire coast, which has flourished here at least since the times of the 'Bridlington Crag.' In the Lias Scars at Redcar. At Scarborough, both on the North shore in company with *P. candida*, and also on the South shore, in the gray limestone—very fine in the last-named locality. Also in the chalk near Danes' Dike.

SAXICAVIDÆ.

Saxicava Norvegica Spengler.

Occasionally brought in by the deepwater fishing boats. A Mr. Ferguson thus met with two specimens at Redcar. The Rev. F. Hayden, of Skelton, obtained a specimen from a Scarborough fisherman. Mr. Bean used to get it occasionally.

Saxicava rugosa L.

Abundant along the coast, both in burrows and attached by a byssus to the roots of *Laminaria digitata*. Danes' Dike. Scarborough. Redcar, where it is occasionally washed up in vast numbers. The large water-worn lumps of chalk flung up by the sea under Flamborough Cliffs are often full of old specimens, which may be almost termed semifossilized.

MYIDÆ.

Mya arenaria L.

Occurs in the mudflats which border the estuary of the Tees. The Redcar fishermen occasionally use it for bait, but it is not abundant. I have once taken it alive in Bridlington Harbour.

Mya truncata L.

This species also occurs in the Tees estuary, and after certain winds is sometimes cast up in considerable numbers on Coatham Sands.

PANDORIDÆ.

Lyonsia Norvegica Chemn.

Has been taken at Scarborough.

ANATINIDÆ.

Cochlodesma prætenue Pult.

I have only once met with this scarce shell on the Yorkshire coast, viz., at Redcar, where I found a perfect specimen on the beach after a violent storm. It has been dredged at Scarborough.

SOLENIDÆ.

Solen pellucidus Penn.

On the sandy beaches of Coatham and Bridlington, but far from common. Also at Scarborough.

Solen ensis L.

Coatham Sands, but in no great plenty. The young of the next species is often mistaken for it.

Solen siliqua L.

Abundant on sandy beaches near low-water mark. After rough weather it is cast up by thousands on Redcar beach, and sometimes in equally large numbers at Bridlington Quay. This species is a favourite bait with the fishermen, who dig it up with a fork at spring tides. It must be wonderfully prolific and rapid in growth to maintain its numbers as it does.

MACTRIDÆ.

Mactra solida L.

May always be obtained alive on Coatham Sands after rough weather, though seldom very plentiful.

Mactra subtruncata Da Costa.

Very abundant at Coatham and Redcar, but all the specimens I have seen are very small.

Mactra stultorum L.

The commonest of the genus, often cast up in thousands alive near Coatham. Frequent also at Saltburn, Scarborough, Filey, and the south sands at Bridlington. On one occasion Redcar beach was strewn exclusively with very young specimens only a few lines broad.

Var. cinerea Mont.

Hardly less common than the type. Fine at Redcar.

Mactra elliptica Brown.

A deep-water species, which I have taken from the stomachs of haddocks caught at Staithes. Also obtained at Redcar and Scarborough.

Lutraria elliptica Lam.

This fine shell lives with the *Myæ* in the estuary of the Tees, and is cast up at Coatham after rough weather, sometimes in numbers. I have also taken it alive in Filey Bay. The animal will sometimes startle the collector by squirting salt water into his face with surprising violence.

Scrobicularia piperata Gmel.

This thoroughly estuarine species was very numerous in the Tees mudflats, and its dead shells strew the ground recovered by banks from the sea, but I cannot now find it in a living state. I once observed it thrown up in cleaning out some ditches near Coatham, a quarter of a mile distant from present high-water mark. These ditches twenty-five years ago contained *Conovuli*; now they are tenanted by *Limnæadæ*. This species

is very plentiful near Eston, with the valves still *in situ*, and also occurs at Scarborough.

Syndosmya prismatica Mont.

Dredged off Cayton Bay, between Filey and Scarborough, June 1882. Also got at Redcar.

Syndosmya alba Wood.

After a long storm from the north in November, 1878, the beach at Coatham was in places quite white with this pretty shell. One specimen I obtained then measures—L. 0.7, B. 1.0. The dimensions given by Jeffreys are L. 0.5, B. 0.8.

Syndosmya tenuis Mont.

This shell may generally be got at the mouth of the Tees, near Eston, where the water is brackish. Sometimes it is left abundantly at high-water mark.

TELLINIDÆ.

Tellina Balthica L.

An abundant shell where there is mud at low-water mark. Common in Bridlington Harbour. Scarborough (North sands). This is one of the few shells found plentifully in the basement clay at Bridlington.

Tellina tenuis L.

Very common at Redcar. Also at Saltburn, Filey, &c.

Tellina fabula Gron.

Similarly distributed.

Psammobia tellinella Lam.

I obtained a single specimen at Bridlington Quay many years ago; and there is one in Scarborough Museum obtained at that place.

Psammobia Ferroensis Chemn.

This charming species is unusually abundant on the Yorkshire coast. Very rough weather brings it up alive on Coatham beach in numbers. It can also be obtained very plentifully by dredging off Filey.

Donax vittatus Da Costa.

Very common on all sandy shores, as at Redcar, Filey, and Bridlington.

VENERIDÆ.

Venus striatula Donov.

Common on sandy beaches, particularly so at Redcar and Filey. The specimens vary greatly in colour and markings.

Venus ovata Penn.

Venus fasciata Da Costa.

These shells are quoted from Scarborough on Bean's authority.

Artemis exoleta L.

Very scarce on the Yorkshire coast. I have taken it at Redcar, and seen it from Scarborough.

Artemis lincta Pult.

Abundant off Coatham and Redcar. After rough weather I have seen the beach from Coatham Pier to the Tees Breakwater literally covered with living specimens of this species.

Tapes virgineus L.

This familiar south-coast species is seldom taken off this coast. I have once met with it at Redcar, and it has been got also at Scarborough.

Tapes pullastra Mont.

Common everywhere, along with its variety *perforans* Mont.

Lucinopsis undata Penn.

Not nearly so abundant, I think, as it was ten years ago. At that time its numbers on Redcar beach almost rivalled those of *A. lincta.*

CYPRINIDÆ.

Cyprina Islandica L.

Cast up alive in quantities after heavy weather all along the beach from Saltburn to the Tees mouth. Also at Filey.

Astarte compressa Mont.

The valves picked up on Bridlington beach are perhaps fossil, but Bean used to dredge it in deep water off Scarborough.

CARDIIDÆ.

Cardium echinatum L.

I have taken fine specimens from the fishermen's lines at Redcar. When cast up on the beach the spines are usually rubbed off.

Cardium edule L.

There are extensive Cockle beds in the mudflats by the Tees.

Cardium nodosum Turton.

Cardium Norvegicum Spengler.

Specimens of both these species are in Scarborough Museum, labelled 'Scarborough.'

CARDITIDÆ.

Cyamium munitum Fab.

Among seaweed near low-water mark at Scarborough.

LUCINIDÆ.

Lucina borealis L.

Mr. Roberts, of Scarborough, tells me this species has been frequently dredged there.

ARCIDÆ.

Nucula Nucleus L.

I have dredged this species off Cayton Bay.

Nucula nitida Sow.

Nucula tenuis L.

Both at Scarborough (Scarborough Museum).

MYTILIDÆ.

Mytilus edulis L.

Everywhere on rocks and piles between tide marks—chiefly the small form. On West Scar the fishermen had some 'mussel preserves,' where they grew them to a large size for bait.

Modiola modiolus L.

At the roots of seaweed, &c., attached by a byssus. So abundant near Runswick Bay as to be used for bait. This is one of those shells which appears capable of enormous development under favourable circumstances. I have two specimens taken in deep water off Bridlington, which measure each about six inches in length.

Modiolaria nigra Gray.

Redcar (Ferguson).

Crenella decussata Mont.

Scarborough (Bean).

PECTINIDÆ.

Pecten pusio L.

Not uncommon at Redcar.

Pecten varius L.

Redcar. I have only taken small specimens.

Pecten opercularis Da Costa.

Washed up on Redcar sands after very rough weather. Dredged off Bridlington.

Pecten tigrinus Müll.

Dead shells occasionally thrown up on Redcar beach.

ANOMIIDÆ.

Anomia ephippium L.

Very abundant in its young state on other shells, such as *Fusi*, and on stones and seaweed.

Marine Shells at Mablethorpe.—This small place on the Lincolnshire coast appears to be good hunting ground for the conchologist. A friend, making a short stay, kindly collected for me a large boxful of shells, taking specimens at random. The burrowing species, *Solen*, *Mya*, and *Pholas*, were very plentiful, an odd valve of *Pholas dactylus* measuring $4\frac{5}{8}$ inches.—W. GAIN, Tuxford, Newark, August 5th, 1884.

Hawfinch in Cumberland.—Apropos of the Hawfinch breeding in Durham and Northumberland, it may be worth while remarking that a single example was observed near Carlisle, on April 20th, and lingered for about a fortnight. It seems probable that if it could have found a mate it might have nested with us. The Hawfinch is a scarce *winter* visitor to Cumberland, but I know no other instance of its presence during the breeding season.—H. A. Macpherson, Carlisle, August 1st, 1884.

—In my note last month I omitted to state that the Durham nest was found at Winlaton.—W. E. C.

Garganey in Cumberland.—On the 12th of March, 1884, an immature female, obtained on the Solway, near Carlisle, was sent to me in the flesh. A fine drake was shot in the north-east of Cumberland in the spring of 1882. There are, however, no examples in any of the local collections that I have examined, which is, perhaps, to be accounted for by the fact that the Garganey visits us on passage, when the fowling season has nearly expired. I should be glad if the readers of the *Naturalist* can give me any further data as to the distribution of this species in the north-west of England.—H. A. Macpherson.

Nesting of the Quail in Wensleydale.—A few days ago a man brought me a Quail with its head cut off, and its body almost cut in two. He had been mowing in a field just west of Carperby, and his scythe had struck the bird while sitting on its nest. The nest contained 10 eggs, four of which were given to me, and two were broken by the scythe. The eggs were slightly sat. This is the first occurrence which my father (Mr. Edward Chapman) remembers of the Quail occurring in this dale.—John Percival, Carperby, Bedale, July 28th, 1884.

Woodcock Breeding in Nidderdale.—During the evening of the 1st of July, while passing through a wood near Pateley Bridge, I flushed a pair of Woodcocks feeding in a marshy place; I first thought them to be pheasants, but, on close examination, I discovered some young ones, about three in number, one of which I took and forwarded alive to Mr. W. Eagle Clarke, F.L.S., as I had some doubt as to the species breeding in Nidderdale. Late in the spring I flushed two old birds about the same spot, probably the same birds. The young bird I took is now stuffed and in my possession.—W. Storey, Pateley Bridge, August 11th, 1884.

Thick-knee and Temminck's Stint in Lincolnshire.—Among some birds lately received for preservation by Mr. Barber, of Sincil Street, Lincoln, are two specimens of the Thick-Kneed Bustard or Thick-Knee (*Œdicnemus scolopax*), which were trapped a short while ago in a rabbit warren near Gainsborough; also a specimen of Temminck's Stint (*Tringa Temminckii*), which was killed near Lincoln by flying against the telegraph wires; these are perhaps worth recording.—W. W. Fowler, Lincoln, July 18th, 1884.

Smew in Cumberland.—A fine male Smew was shot on the river Tyne in December, 1883. Examples have been repeatedly obtained in the county, and on one occasion a pair were shot on the Eden *at Carlisle;* but I do not know of any occurrence in recent years, except the one now chronicled.—H. A. Macpherson, Carlisle, August 1st, 1884.

Little Gull at Whitby.—On July 15th, whilst boating on the River Esk near Whitby, I noticed a specimen of the Little Gull fishing quite near to me in company with Kittiwakes. Its extremely small size first struck me, though a broad black band about half-an-inch from the end of the tail made the bird, even at a considerable distance, quite conspicuous.

The Little Gull is rare at Whitby, only one or two having been observed there, so far as I can ascertain, though it appears periodically on the Yorkshire coast in autumn and winter. The specimen above mentioned was, I believe, a bird of the second year.—J. Backhouse, Jun., West Bank, Holgate, York.

WILD CAT IN LINCOLNSHIRE.

By JOHN CORDEAUX,

Great Cotes, Ulceby, Lincolnshire; Member of the British Ornithologists' Union; and of the British Association Migration Committee; &c.

The subject of this notice was shot in the early part of March, in 1883, by Mr. Arthur Belton, a farmer living at Bullington, near Wragby. Mr. Belton states that he was out with his gun in a small plantation near Bullington Wood when his dog, a small terrier, started the cat from beneath a bramble bush; instead of bolting the cat at once attacked the dog, which it severely mauled. Seeing his dog was getting much the worst of it Mr. Belton went to the rescue, the cat finally taking refuge in an oak tree, crouching between two branches above the bole, and perceiving the creature apparently making preparations to spring he at once fired at its face and brought it down. Mr. Belton thinks it is the same cat which had been seen at intervals for some years in that neighbourhood.

It was received in the flesh by Mr. W. Barber, of Lincoln, and set up by him, and remains still in his possession. Mr. Barber informed me that on skinning it he found the muscles very strong, red, and highly developed, and that the intestines were much shorter than in the common cat.

I have examined this cat in Mr. Barber's shop, also had a photograph taken of it, and I have compared it with the best written descriptions of the true wild cat, as well as with an example obtained many years ago in the forest of Mar. There cannot be a doubt as to its authenticity, and that it is the genuine animal. It appears to agree exactly in size and coloration with the true *Felis catus*, and the only slight difference that I can point out is that the tail is not quite so full at the end as in some Scotch examples. Scotch cats, however, appear to vary in this respect, and Mr. Macgillivray states ('British Quadrupeds,' page 191), speaking of the tail, 'generally as broad to the end as the base, although often narrowed at the tip.'

In the Lincolnshire example, which is a fine old 'tom,' the fur is very thick and close; the general colour a yellowish-grey, but browner or more tawny about the forehead and neck, the lateral stripes on the body and limbs a darker grey. There is a broad dark and irregular band down the centre of the back with two dark stripes, one on each side, curving downwards from between the scapulæ. From the eyes and continued backwards between the ears to the nape of the neck four narrow dark and broken lines; a small dark streak also from the interior angle of the eye downwards, and another from the exterior angle which terminates on the cheek

below the ear; tail cylindrical and covered with thick long hair with alternating rings of black and grey, the tip for two inches black. Ears large, triangular, and erect, directed forward; eyes large. Canine teeth, long, conical and very formidable, the central portion of the tongue covered with strong horn-like papillæ directed backward. Feet yellowish-grey, lighter than body; soles black.

Bullington Wood is remarkable as being the last haunt of the Kite in Lincolnshire; a pair nested there in 1870. The Pine Marten is still found in the district, examples being obtained almost every year. The Polecat is very common. This wood is one of a chain of extensive woodlands reaching from Wragby in Mid-Lincolnshire to near Peterborough, which have never been preserved for game, and where keepers are few and far between, or only occasionally employed. Cats are known to have bred there in a wild state for generations. There is, therefore, no improbability that this cat may have descended directly from the old British wild cat. That it should be a reversion from the domestic race to the wild type is scarcely probable, unless we are prepared to allow for a strong admixture of original blood coming from pure wild ancestors which at no distant period inhabited the district.

Badger near Barnsley.—A fine specimen of this scarce mammal was taken at Wortley, on April 22nd, by the Earl of Wharncliffe's keepers. The badger, which was a male, weighing about 35 pounds, was kept for some time in confinement, and ultimately turned out on his lordship's property in North Yorkshire.—Wm. E. Brady, 1, Queen Street, Barnsley.

Etymology of the Words 'Spurn' and 'Ravenspurn.'—As in the last number of the *Naturalist* Mr. Cordeaux has given an article on the Spurn, and as the next meeting of the Yorkshire Naturalists' Union is in the same interesting locality, a few notes on the etymology of the two towns which originally stood there may not be out of place. These towns were known by the names of Ravenser, and Ravenser Odd. The spelling varied, as we shall see presently. The initial part of the word (Raven) is clear enough. Whether a personal name or not, it arose from the traditional war-standard of the Vikings. The terminations do not seem to have been touched upon by any one, yet they are very expressive. 'Eyrr' is, in Icelandic, 'a gravelly bank.' It is used of small tongues of land running out into the sea. Eyrr is equivalent to Danish 'öre' and Swedish 'ör'; and, curiously enough, we find Ravenser spelt as Ravensore. Then there is an Icelandic word, 'oddi,' which also means a point or tongue of land, frequently used in local names. Moreover, the words eyrr and oddi are used together as eyrar-oddi, 'the point or tongue of an eyrr.'

If Ravenser meant the gravelly bank on which the Raven standard was planted, Ravens-er-Oddi would be the point or tongue of the said eyrr, and consequently further from the shore, as we know that the town of Ravenser Odd or Ravensrode was placed. Ravenser appears later as Ravenspur—and later still as Ravenspurn. Then Spurn appears by itself, but both 'n' and 'p' may be accidental accretions from the original Ravens-er, without calling in any 'spyrian' or 'spurnan.'—E. Maule Cole.

A NEW VARIETY OF COW-WHEAT:
Melampyrum pratense var. hians.

By G. CLARIDGE DRUCE, F.L.S.,
Oxford.

(Read before the Linnean Society, June 5th, 1884.)

Cow-wheat (*M. pratense*), a most variable plant, has been divided into two well-marked varieties, *i.e.*, Johnston's var. *montanum*, a widely-distributed plant in hilly districts of North Britain; and Oliver's var. *ericetorum*, at present recorded only from Western Ireland, where occasionally it is found in very boggy places; in addition to these two, a third form—which we owe, I think, to the critical acumen of Mr. Borrer—is described in the 'Student's Flora' and figured in 'English Botany' under the name *latifolium*, which seems to have rather slender claims to a distinctive name, and is found in woods on the tertiary capping the chalk in Oxfordshire, Brickhill Woods, Beds, &c., and is perhaps more frequent than its records suggest. To these I venture to add a fourth, which was noticed last July by the Cree-side in Wigtownshire, occurring on the high steep bank of the river a little north of Newton Stewart, opposite Minnigaff. At first I considered it an interesting form of *sylvaticum*, the *deep yellow coloured* flowers and *open* corolla tube influencing this decision, but the above characteristics disappeared on drying, when its *facies* was that of *pratense* alone. In October the Rev. H. P. Reader sent me specimens 'of a form of *pratense* which I find commonly in woods near Ambleside, at no great elevation, having the deep yellow flowers and open corolla of *sylvaticum*, and all other characters of *pratense*, not of *var. montanum*.' Examination showed this to be similar to the Wigtown plant. In the 'Botanist's Guide' reference is made to a deep yellow flowered form of *pratense*, and in the 'New Botanist's Guide' Mr. Watson says they both (the pale and deep yellow forms) grow about Derwentwater, but no mention is made of the corolla being open or closed. It is not improbable these may be similar plants. This variety, I suggest, should be known as *Melampyrum pratense L.* var. *hians*, which may be briefly characterised as follows: plant hispidly pubescent, 6 to 18 in. high; leaves ciliate, lanceolate, quite entire; bracts toothed, or entire, ciliate; corolla *deep yellow*, horizontal or slightly ascending; tube nearly straight and gradually contracted; lips *open*, *palate so low as not to close* entrance to tube; capsule reflexed.

It may be distinguished from *sylvaticum* by its larger, more hori-

zontal flowers (*much* larger than the calyx), broader leaves, and reflexed capsules. (In the British Museum Herbarium is a specimen of *M. sylvaticum*, which has the capsule reflexed.)

In the Wigtown locality no other *Melampyrum* occurred, so hybridity is not likely.

Many mistakes have been made by fairly competent botanists in naming specimens of *pratense* as *sylvaticum*, and it is not unlikely that plants of var. *hians* have been thus mistaken; such errors suggest some faulty or incomplete specific definition.

As characters of *pratense*, the pale yellow flowers and closed mouth had in future better be omitted. The colour of *M. sylvaticum* is not constant, as Dr. Buchanan White describes 'a form growing with the type, but more sparingly in Glen Hill, East Perth, which had the flowers smaller, corolla mouth less open, corolla pale yellow or whitish touched with violet, bracts shorter and broader' (*Scottish Naturalist*, 1875, p. 20), which he suggested should be known as *M. sylvaticum L.* var. *pallidiflora* White.

Manchester Cryptogamic Society.—At the July meeting, Dr. B. Carrington, F.R.S.E., in the chair, Mr. W. H. Pearson exhibited specimens of *Radula aquilegia* (Tayl.), collected May, 1883, by Mr. G. Stabler and himself, at Llanberis, being a new station for this rare hepatic. The honorary secretary exhibited several interesting varieties of British ferns, which had been sent him by Mr. J. Tyerman, from Cornwall. Mr. Wm. Forster exhibited fronds of *Asplenium lanceolatum* which had been gathered wild by the Rev. W. T. Baker, in Cumberland. This important record of so northern a habitat in Britain for so southern a fern was communicated by Mr. J. M. Barnes, of Milnthorpe.—T. ROGERS, Hon. Sec.

Mosses, &c., at Sherburn-in-Elmete.—While with the Yorkshire Naturalists' Union on the 2nd June last, I gathered various mosses and one hepatic. The latter—*Jungermannia turbinata* Raddi—was found in an old quarry. Of the mosses, *Leptobryum pyriforme* Bry. Eur., was in fine fruit in Huddlestone Quarry; and *Anisothecium rubrum* Huds. (=*Dicranella varia* Hedw.) was in old fruit, in an old quarry. All the rest were sterile, and included *Hypnum resupinatum* Wils., on trees in Scarthingwell Park woods; and *H. chrysophyllum* Brid., *Rhynchostegium murale* Dill., *Zygodon viridissimus* Brid., var. *β. rupestris* Lind.(?), *Tortula aloides*, Br. & Sch., and *T. Hornschuchiana* Schultz, found in old quarries near Sherburn. The season being very dry, was not good for collecting these minute cryptogams, and those found could not—on account of their dried-up condition—be well recognised in the field.—M. B. SLATER, Malton, July 7th, 1884.

Some good Surrey plants.—Mr. P. F. Lee, at the monthly meeting of the Dewsbury Naturalists' Society, on the 16th August, laid on the table the following plants he had recently collected on Box Hill (chalk) Leith Hill (greensand) and other parts of Surrey:—*Campanula glomerata*, *Carex pendula*, *Centaurea nigra* (white flowers), *Agrimonia odorata* (Fragrant Agrimony), *Sedum Telephium*, var. *purpurascens*, *Cuscuta Epithymum* (Lesser Dodder) on Furze, Cross-leaved Heath, Bilberry, and Ling; *Clematis Vitalba*, *Asperula cynanchica*, *Orobanche minor* (parasitic on Clover), *Carduus acaulis* (Dwarf Thistle), *Inula Conyza* (Ploughman's Spikenard), *Koeleria cristata*, *Hypericum calycinum*, *Chlora perfoliata*, and in fruit on Box Hill, Juniper, Privet, Box, Yew, and Buckthorn.

Naturalist,

MICRO-PALÆONTOLOGY OF THE NORTHERN CARBONIFEROUS SHALES.

By GEORGE R. VINE,

Attercliffe, Sheffield; Secretary of the British Association Committee on Fossil Polyzoa.

I.—INTRODUCTION: FORAMINIFERA, &c.

Many years ago, before the publication of Mr. H. B. Brady's Monograph on the Carboniferous and Permian Foraminifera (Palæontographical Society, 1876), I received from the Rev. W. Howchin, most of the material out of which I have picked the micro-organisms that will be described in the following papers. Before, however, I describe the organic forms it may be well to direct attention to the material itself. Previous to the publication of a few special papers within the last thirty years, very little attention was paid to minute organisms in the Carboniferous Shales of either Scotland or England, and consequently it was supposed by people unacquainted with the subject that our British Carboniferous Shales were poor indeed in Foraminifera and Entomostraca. It is only within the last ten or twelve years that very many species belonging to these two classes have been added to our British lists. In 1875, Mr. Howchin writing to me when sending the material says: 'Foraminifera from the [Carboniferous] Limestone, have been hitherto considered very rare objects, and I question if there are half-a-dozen persons in the kingdom who have examples [of material] such as I now send you. Mr. H. B. Brady is preparing a monograph . . . in which he will figure no less than about fifty species, some of which I have been so fortunate as to discover myself.' Of the Entomostraca of East Kilbride, Scotland, only fifteen or twenty species were known when Mr. John Young began his labours, and by his continuous researches Mr. Young has added considerably to our lists, which Professor T. Rupert Jones and Mr. J. W. Kirkby have so ably described in their various papers. The Polyzoa of the Northern Carboniferous Shales have not, as yet, been described; and it is my intention in the first place to direct special attention to these, and incidentally to the other organisms as well.

It may be well, perhaps, for the sake of young beginners, to point out how material may be obtained. In the first place anything will be valuable in connexion with the Limestone series which is dissolvable and can be washed down in water, such as are generally found either as:—

Sept. 1884.

1. 'Marly partings between the different beds of Limestone.
2. 'Beds of Argillaceous Shales interstratified with the Limestone.
3. 'The face of the rock undergoing disintegration, as when it comes near the surface covered with a slight soil.
4. 'Fragments of Limestone in a rotten condition which can be dealt with similarly as chalk.'

Such were the instructions given to me by Mr. Howchin in 1875, and since then I have never failed to obtain abundance of material for my labours whenever I visited a Limestone district.

'In the North of England, and particularly in Scotland, the Limestone is split up into a number of minor beds, intercalated with shales, &c., which were undoubtedly formed in close proximity to land; the shales probably under estuarine conditions: some are strongly carbonaceous, and indissolvable, others argillaceous, and with more or less ease can be washed down and the fossils separated from the matrix' (Rev. W. Howchin, *lit. cit.* 1875). There are, however, many shales in the North—and especially so in North Yorkshire—so saturated with mud that at first sight it seems almost hopeless to expect to find minute fossils in these. This repulsive aspect of the muddy material must never be a means of deterring the student from thoroughly searching everything. The richest shales, such as those of Hurst, Gair, and Hairmyres, are repulsive in the extreme to look at, but the reward to the washer is most ample. It is so with the shales of Northumberland, and all that I can say to the worker is what was said to me when I began my studies:—'First search, then find: then learn; after which tell others what you know.'

My Northumberland material is derived from several localities, the principal of which are:—

(1) Redesdale, Ironstone workings.
(2) Skellygate, Redesdale.
(3) Elf Hills Quarry, Yoredale series.
(4) Fourstones; and
(5) Ingoe, also Yoredale.

Before passing away from these different workings to my own special subject, I will give a list of the Foraminifera found in the material and described by Mr. H. B. Brady in the Monograph previously referred to.

Of the twenty-nine species of Foraminifera cited on next page the most abundant of the forms are found in No. 2, Skelly gate, and No. 4, Fourstones, and the next abundant in No. 5, the Ingoe Shales. The Foraminifera are very rare in the other washings. Only two

species are recorded by Mr. H. B. Brady as occurring in Redesdale.‡ Yet this locality is the richest both for Corals and Polyzoa; though Polyzoa are found in some of the other washings as well.

	Genera and Species.	Localities.				
		1	2	3	4	5
1	Saccammina Carteri *Brady*			*		
2	Lituola nautiloidea *Lamk.*		*			
3	Climacammina antiqua *Brady*		*		*	
4	Trochammina incerta *D'Orb.*	**	**	*	*	*
5	,, centrifuga *Brady*	**	*v		*	*
6	,, annularis *Brady*			*		
7	,, gordialis *Parker and Jones* ...			*		
8	Valvulina palæotrochus *Ehrenb.*	*v	**		*	*
9	,, var. compressa *Brady*	*v	**		*	*
10	,, decurrens *Brady*...	*v	**		*	*
11	Endothyra Bowmani *Phillips*	*v	*		*	*
12	,, globulus *D'Eichw.*		*		*	
13	,, crassa *Brady*		*			
14	,, radiata *Brady*	*v			*	*
15	,, ornata *Brady*		*		*	
16	,, obliqua *Brady*		*			
17	Nodosinella cylindrica *Brady*				*	
18	,, concinna *Brady*				*	
19	,, lingulinoides *Brady*		*		*	
20	Stacheia marginulinoides *Brady*	*v	*		*	*
21	,, pupoides *Brady*				*	
22	,, acervalis *Brady*				*	*
23	,, congesta *Brady*		*		*	*
24	,, polytremoides *Brady*		*		*	*
25	Lagena Parkeriana *Brady*	*v			*	
26	,, Howchiniana *Brady*		*		*	
27	,, Lebouriana *Brady*	*v			*	
28	Textularia gibbosa *D'Orb.*	*v	*		*	*
29	,, eximia *D'Eichw.*	*v	*		*	*

* H. B. Brady.

** In my own cabinet, and H. B. Brady.

*v Additions to this locality.

‡ I have marked additions in the No. 2 column by the letter 'v' signifying that the species is in my own cabinet.

One word to the special student before I conclude this introductory paper. In all your researches be careful not to mix your micro-organic forms. If you do not know the name of a species call it No. 1 or No. 10, and be sure that you never use those numbers except for the same organism; but whatever you do, add to the number the locality and horizon from which you derived your species. For the want of adherence to this caution many valuable collections are utterly useless in a palæontological sense, valuable as they may be as indicative of the painstaking and industry of the collector. Make also rough sketches and brief notes in a special book kept for the

purpose, and you will not be long before the sacred numbers of your fossils are identified and real names substituted in the place of the numbers. This is one of the reasons why I begin this series of papers with the list of Foraminifera found in the same washings of the Northumberland Shales, which I have searched so earnestly for Polyzoa.

So that these shales may be well searched for the organic forms which are so abundant in them, I shall feel it to be a pleasure to help any student by naming the Polyzoa or Foraminifera for them; or I shall be glad to receive lists of additional species found in these or any other North British Locality.

(To be continued.)

THE YORKSHIRE NATURALISTS' UNION AT HELMSLEY.

Brilliant weather again favoured the Yorkshire Naturalists on the Bank-Holiday Monday (4th August), when they visited Helmsley for the purpose of investigating the upper part of the picturesque valley of the Rye, the noble demesnes of Lord Scarborough at Duncombe Park, the fine old ruins of Rievaulx Abbey, the well-wooded sides of Beckdale, the steep-sided ravines about Hawnby, and the surrounding flat-topped oolitic moorlands. There were four principal lines of route followed. The bulk of the members visited Beckdale, a highly productive little valley running for about two or three miles N.N.W. from the town, while some proceeded direct to Rievaulx. The geologists accompanied the Rev. E. Maule Cole, and a small party of members interested in botany and conchology drove to Hawnby, and from that place worked at the plants of the lower end of Snailesworth Glen, and at the shells of Hawnby Hill. Tea was served and all the meetings were held at the Black Swan Hotel, Helmsley. At the general meeting, the Rev. William Fowler, M.A., of Liversedge, vice-president, occupied the chair. The minutes of the Hawes meeting having been taken as read, the roll of the Societies in union was called over in the usual way, when it was found that the following 17 (out of the 40 constituting the Union) were represented:—Heckmondwike, Bradford (3 Societies), Leeds (3), York (2), Selby, Driffield, Liversedge, Dewsbury, Scarborough, Malton, Ripon, and Hull (Great Thornton Street). The attendance of individual members was about seventy or eighty. The following new members were elected:—Mr. Thos. Collier, of Ripon; Mr. C. S. Roundell, M.P., of London; Miss Harriet J. Roundell, of Gledstone, near Skipton; Mr. H. J. Wilkinson, of York; Mr. R. Thornton Dale, Miss Emily Dale, and Miss Flora Dale, of Ilkley; Rev. I. Harding, of Linthwaite, near Huddersfield; Mr. Edmund Grove, of Saltburn-by-the-Sea; and Mr. Herbert Prodham, of Allerston, near Pickering. Thanks were unanimously voted, on the motion of Mr. S. Chadwick, of Malton, to Lord Feversham, the Rev. O. A. Manners and Mr. H. W. Pearson, for permission so readily accorded to visit their respective estates. The reports on the day's investigations were then given by the spokesmen of the various sections, in the following order:—

The report of the Botanical section had been prepared by its secretary (Mr. George Massee, F.R.M.S., of Scarborough), but in his temporary absence from the meeting, it was given by the Rev. W. Fowler, who showed the more interesting of the specimens found. Notwithstanding the dry weather plants were abundant, 257 species of phanerogams being noted, mostly at Helmsley and

in Beckdale, the most interesting of them being: *Helleborus viridis*, *Actæa spicata*, *Fumaria pallidiflora*, *Parnassia palustris*, *Nasturtium officinale* var. *siifolium*, *Geranium columbinum*, *Rubus saxatilis*, *Rosa systyla*, *Epilobium palustre*, *Scabiosa columbaria*, *Carlina vulgaris*, *Pinguicula vulgaris*, *Anagallis tenella*, *Gymnadenia conopsea*, *Epipactis palustris*, *Blysmus compressus*, *Carex stricta*, *C. ampullacea*, and *Melica nutans*. Mosses were scarce, 21 species only being observed, inclusive of *Brachyodus trichodes*, *Philonotis calcarea*, *Hypnum chrysophyllum*, *Eurhynchium striatum*, *Amblystegium confervoides*, *Fissidens pusillus* and *Limnobium palustre*. Fungi were tolerably abundant and some unusual forms occurred, the 25 named including *Pluteus chrysophæus*, *Entoloma nidorosus*, *Russula heterophylla*, *R. vitellina*, *Gomphidius stillatus*, *Eccilia carneogriseus*, *Crepidotus mollis*, *Polyporus varius*, *Boletus satanas* and *B. flavus*, the last-named being very abundant.

For the Geological section, of which both the secretaries were present, one of them, the Rev. E. Maule Cole, M.A., vicar of Wetwang, reported to the following effect:—The section, under the guidance of the Rev. E. Maule Cole, M.A., who was accompanied by the Rev. C. N. Gray, M.A., vicar of Helmsley, started from the Market Cross a little before noon for Sproxton Quarry. The route chosen was along the terrace in front of Duncombe House to the Mill on the Rye—beautiful views of the valley carved out by this moorland stream being obtained from time to time, as well as glimpses of the Tabular Hills and Vale of Pickering. On reaching the quarry at Sproxton, the beds of Coral Rag and Coralline Oolite were pointed out. The old faces of both presented a most beautiful arabesque appearance from the effects of weathering; innumerable fossils, clued together into a hard solid mass, showed on the surface exquisite forms of sculpture such as no chisel could give. Hammers and chisels were brought into requisition, but so hard and firm was the rock that specimens were only obtained with great difficulty. Amongst these were several kinds of Corals, such as *Thamnastræa* and *Thecosmilia*, some very large spines of *Cidaris florigemma*, a *Trigonia*, *Lima*, and the ubiquitous *Chemnitzia*. In places the rock consisted largely of crystallised carbonate of lime. Few quarries are so interesting and deserving of a visit as the Sproxton Quarry. Leaving this, the party proceeded through some charming woodland scenery amidst bracken seven and eight feet high in which crouched the red deer, to what are called the 'windy pits.' The surface is occupied by the middle calcareous grit, the same formation which appears on the moors just above Thornton, and which forms Filey Brig. This bed weathers into sand—all the lime being washed out. Underneath lies a series of limestones which are in places dissolved by the rainfall, and the sand on the surface then slips down and forms a cup-shaped hollow. These hollows are frequent in this formation and have been mistaken for ancient British dwellings, &c., but they are quite natural. At the 'windy pits' the dissolving action of the rainfall has excavated a deep narrow chasm, which possibly extends to the bed of the stream below, and that at no distant period—at all events the surface has only recently fallen in, as the roots of a living tree extend right across the open fissure without any support. No information could be obtained as to why the pits were called 'windy.' It was stated as a tradition that a dog was once put in at the top, and came out at the bottom, which on the whole is more probable than that a dog was put in at the bottom and came out at the top! The rest of the way to Rievaulx Abbey was again through exquisitely wild scenery where the foot of man seldom disturbs the stately herons, and from the terrace above a good view was obtained of the characteristic Nabs which form the outer escarpment of the Tabular Hills, and of the surface effects produced by the weathering of the middle Calcareous grits of Wass Moor.

For Vertebrate Zoology, in the absence of the officers of the section, Mr. W. Eagle Clarke, F.L.S., of Leeds, reported to the effect that the district was a rich and varied one ornithologically, and was especially interesting from its possessing two of the most local species of Yorkshire birds—the Pied Flycatcher and the Nuthatch—in considerable numbers. Unfortunately the section had been very inadequately represented, and consequently but a meagre list was the result of the ramble. This comprised eight summer visitants and nineteen residents, and included both the species above mentioned. Among the mammalia, a Water Vole, caught in Beckdale, was exhibited at the meeting.

The Rev. W. C. Hey, M.A., of York, president of the Conchological section, stated that the Helmsley district is so singularly deficient in ponds and ditches that *Limnæa peregra* was the only freshwater mollusk collected. A fair number of land-shells was obtained, in spite of the extraordinary dryness of the season. The most characteristic species collected were *Helix sericea*, *fusca*, *lapicida*, and *rupestris*. The two former occur in subalpine woods, on leaves of nettle and dog-mercury, and the two latter on limestone walls. *Clausilia laminata* turned up abundantly in the woods, some specimens being curiously gibbous in shape. The total number of mollusca observed during the day was twenty-eight.

For the Entomological section, in the absence of its officers, Mr. George C. Dennis, of York, acted as spokesman, stating that the section was not largely represented. The weather being dull and cloudy during the fore part of the day, the Butterflies did not appear in such large numbers as they would have done if it had been brighter, and the sun had given more of his dazzling beauty. Insect life, it was believed, would have been more plentiful, for Beckdale is a charming haunt for those sun-loving species which delight to revel in Nature's most favoured nooks. Colston Hag and Beckdale were the principal localities visited, and the following species were noted or captured:—*Pieris brassicæ*, *P. rapæ*, *P. napi*, *Argynnis paphia*, *Vanessa urticæ*, *Satyrus janira*, *S. hyperanthus*, *Chortobius pamphilus*, *Thecla quercûs*, *T. W-album*, and *Lycæna alexis*. Among the Geometræ, *Boarmia repandata*, *Asthena Blomeraria* (which is not uncommon here), *Ypsipetes elutata* (some remarkably fine and distinct varieties), *Cidaria immanata*, &c., &c. *Charæas graminis* was the only Noctua captured. That fine and lovely butterfly, *Vanessa C-album*, which there was much desire to see on the wing, was not found, the date being somewhat early for it. The section was informed by Mr. Dutton that he took it freely last year, some two or three weeks later. There is no doubt that the district, if systematically worked, would produce many good insects not yet recorded for that locality.

The customary vote of thanks to the chairman was proposed by the Rev. E. M. Cole and unanimously voted, closing the meeting.—W. D. R., W. E. C.

Heliothis peltigera at Wallasey, &c.—At the July meeting of the Lancashire and Cheshire Entomological Society, Liverpool, the most interesting things shown were two specimens of this insect, caught at Wallasey by Mr. Wilding, and a living larva of *Acronycta alni* from Leominster, exhibited by Mr. Pierce.—J. W. E.

Phycis betulella, &c., near Doncaster.—On May 31st, Mr. G. Tindall and I collected the full-grown larvæ of this species freely from the birches in the Green Farm Wood, Doncaster. They were much more plentiful than last year. Larvæ of *Geometra papilionaria* also occurred.—G. T. Porritt, Huddersfield.

Lepidoptera at Windermere.—On Whit-Monday I found *Asthena sylvata* commonly in a plantation on the banks of Windermere Lake, and I also took a single specimen of *Lobophora viretata* near Newby Bridge.—E. P. P. Butterfield, Wilsden, Bingley, August 1st, 1884.

Lepidoptera near Bingley.—Last week my brother took one *Scoparia conspicualis* at Goit Stock, and I took another on Blackhills. *Dicrorhampha herbosana* was common in an old lane, near Beckfoot, in the beginning of July.—E. P. P. Butterfield, Wilsden, near Bingley, August 1st, 1884.

Agdistes Bennettii at Redcar.—Mr. John Sang, of Darlington, informs me that in July last he took another specimen (see 'List of Yorkshire Lepidoptera,' page 174), of *Agdistes Bennettii* near Redcar. This time it was among its foodplant, so that its claim to be considered a northern and a Yorkshire species may now be considered as fairly established.—Geo. T. Porritt, Huddersfield, August, 1884.

Naturalist,

BOOK NOTICES.

Report on the Migration of Birds in the Spring and Autumn of 1883.—By J. A. Harvie-Brown, J. Cordeaux, R. M. Barrington, and A. G. More. 8vo, 130 pages. (London, 1884.)

Like its predecessors, this report is a voluminous and detailed record of facts concerning migratory movements as observed at the various lighthouses and light-vessels on the coasts of the British Islands. It is much to be regretted that there are still no returns from the west coast of England and Isle of Man stations, and the break in the continuity of the records is most unfortunate. The returns from the east coast of England, which are perhaps the most important in their bearings upon the objects of the committee, and are also of the most interest for our readers, have been worked up by Mr. Cordeaux, who has received them from twenty-five lighthouses and light-vessels, of which the Longstone, Inner Farne, Coquet Island, Whitby High, Flamborough Head, and Spurn lighthouses, and the Tees, Spurn (Newsand), Outer and Inner Dowsing, Dudgeon, and Llyn Wells light-vessels constitute the northern section. The Heligoland observations of M. Gätke are also noted by Mr. Cordeaux, and are of the highest value in connexion with our own East coast returns. A careful perusal of Mr. Cordeaux's portion of the report gives one an idea of the immense numbers in which birds make periodical 'rushes' in suitable weather across the North Sea. The principal of these rushes in 1883 were observed on the 21st of September, the 12th and 13th of October, again from the 27th to the 31st, and from the 6th to the 8th of November. On these dates the birds crossed by millions instead of the usual hundreds or thousands of the intervening periods. The mild and genial winter of 1883-4, with its absence of severe spells of hard weather at the time of migration, was favourable to the birds and unfavourable to observing them. Their movements were facilitated, and they were able to proceed direct inland and spread themselves over the country without being compelled to stop exhausted at the coast-line to recruit. As a result, birds have been more numerously observed at the light-vessels moored out at sea than they were at the coast lighthouses, thus leading to lighter returns from the latter ; this being more particularly noticeable in the Scottish reports. Various more or less rare species are noted in addition to the commoner or regular immigrants, the returns for the north-eastern counties of England including notes of the Black Redstart, Bluethroat, Roller, Hoopoe, Great Snipe, Wood Sandpiper, &c. Other notes (on p. 58) refer to lepidopterous insects, and reference is also made to the occurrence of a large Seal (surmised to be *Halichærus gryphus*) at the Tees mouth on the 18th November, and of the Oar-fish at Flamborough. Altogether the report is—for the mass of valuable facts which it contains—well worth the small sum which is charged for it, and we feel sure that many of our readers would—if they were aware of the extent of the pecuniary liabilities to which the recorders are subject, in addition to the heavy labour of collecting and arranging the returns—assist the committee by purchasing copies.—W. D. R.

NOTES AND NEWS.

The Annual Report of the Liverpool Geological Association, dated 1st October, 1883, has been sent us. The work of the Association appears to be in a flourishing state, and its membership is 127. Numerous excursions have been held, and several interesting papers read at the evening meetings. The President for the current year is Mr. Henry Bramall, M.Inst.C.E., and Mr. Osmund W. Jeffs is the Secretary.

A new 'Flora of British Fungi (Hymenomycetes)' by a well-known Scottish mycologist, Rev. John Stevenson, of Glamis, is announced as preparing for publication. It is to be illustrated by Mr. Worthington G. Smith, and is to be in two post octavo volumes. Subgenera as well as genera are to be figured, and the value of the work is to be enhanced by its embodying the views of the eminent Fries, as contained in his extremely scarce Swedish monograph of the same group.

Sir Ralph Payne-Gallwey, Bart., of Cowling Hall, Bedale, Yorkshire, wishes to rescue from oblivion such notes on Decoys—past and present—as may now be recoverable, and is collecting all available or possible information on the subject. These notes he proposes to publish, and already has plans of about a score, most of which are now in use in England and Ireland, as well as of a couple on the Dutch coast, besides particulars of some twenty others which have fallen into disuse. He will be pleased to hear from all who can furnish particulars or any information whatever concerning Decoys, either of the past or present day. Of Yorkshire Decoys there is but one—Hornby, near Bedale—which is worked, those at Home, Meaux, Watton, Scorborough, Osgodby, Escrick, Redcar, Newby, Thorne Waste, Sunk Island, and another which existed on another island in the Humber above 'Hall' having been given up, some of them so recently as from twenty to thirty years ago. Readers who can supply information will do science good service if they will at once place it at the disposal of the author of 'The Wild Fowler in Ireland.'

The death of Mr. John Aitken, of Urmston, near Manchester, at the age of 64, is announced. He was well known in Lancashire as a geologist, and was for some time President of the Manchester Geological Society, as well as a contributor of papers to its publications.

RAINFALL FOR JULY 1884.

STATION & OBSERVER.	Height of Rain-Gauge above Sea-level.	Total Rainfall for Month.	No. of Days on which Rain fell.	Total Fall to Date. In 1884.	Total Fall to Date. Average of Past Years.	Total Fall to Date. No. of Years.	Total Fall to Date. Years of Average.	Heaviest Single Day's Fall. Amount.	Heaviest Single Day's Fall. Date.
	Feet.	Inches	Days	Inches.	Inches.	No.	Years.	Inches	
Derringham, Hull.—Wm. Lawton	10	2·03	16	11·04	11·46	34	1850-83	0·44	4th.
Goole.—John Harrison...	25	3·26	16	12·08	—	9	1875-83	0·95	10th.
Scarborough.—Allan Rowntree	130	2·29	18	12·20	14·22	18	1866-83	0·60	26th.
Baldersby, Thirsk.—W. Gregson	100	6·35	20	17·94	—	—	—	2·09	10th.
Masham.—Thos. Carter..	269	4·54	26	19·46	—	—	—	1·16	10th.
Shadwell, Leeds.—Geo. Paul	500	3·96	20	12·80	—	—	—	0·99	11th.
Leeds.—The Museum ...	183	4·62	26	15·72	13·20	30	{1853-62 / 1865-84}	1·60	9th.
Horsforth.—James Fox	350	4·57	23	16·81	17·38	15	1870-84	1·23	9th.
Barnsley.—Dr. Sadler...	350	2·70	22	14·35	18·23	2	1882-83	0·78	9th.
Wentworth Castle.—Wm. Fisher	520	2·76	23	15·48	19·59	2	1882-83	0·63	9th.
Ingbirchworth.—Mr. Taylor	853	3·33	21	22·24	25·90	2	1882-83	0·55	9th.
Dalton, Huddersfld.—J. W. Robson	350	2·60	22	15·93	17·46	18	1866-83	0·49	26th.
Thorpe, Halifax.—F. G. S. Rawson	365	3·52	23	22·16	27·92	2	1882-83	0·64	9th.

Naturalist,

COLEOPTERA OF THE LIVERPOOL DISTRICT.

By JOHN W. ELLIS, L.R.C.P., L.R.C.S.E.,
Liverpool; Hon. Sec. Lancashire and Cheshire Entomological Society.

PART IV.

BRACHELYTRA.

(Read before the Lancashire and Cheshire Entomological Society, November 26th, 1883.)

I PURPOSE in this paper bringing before you the various species of the Shortwinged Beetles, commonly known as the *Brachelytra*, or shortly, as 'Staphs' (an abbreviation of *Staphylini*), which have occurred in our district. This group contains the largest number of British species of all the Coleoptera, and the individual members are often very minute and difficult of determination. I have to express my obligation to the Rev. W. W. Fowler, of Lincoln, for his assistance in aiding me in the diagnosis of difficult species; and I have again to acknowledge the assistance derived from Mr. Archer's (of Crosby) Diary for the years 1862-63. I am sorry to find so many species occur with only my own initials appended, but the difficulties of determination, and (often) of mounting this group generally cause beginners to put off their collection of these beetles to a more convenient season. I have derived great assistance from Messrs. Wilding and Kinder, in their furnishing me with localities, and I am pleased to be able to enumerate about 220 species as inhabitants of the district, this number including several species hitherto found very rarely in Britain.

The initials F. K., R. W., and J. W. E. refer to Messrs. Kinder, Wilding, and myself respectively.

ALEOCHARIDÆ.

Autalia impressa Ol.

Three specimens taken in the district; locality unknown (F.K.).

Autalia rivularis Grav.

A single specimen taken under bark at Bromborough, in May 1883 (J.W.E.).

Falagria sulcata Pk.

Several specimens under bark of fir, Bidston (J.W.E.).

Falagria obscura Grav.

In nests of the black ant, at Eastham, June 1863 (F. Archer); two specimens with *F. sulcata* (J.W.E.).

Bolitochara obliqua Er.

Under bark, Eastham, not scarce (R.W., J.W.E.).

Phytosus balticus Kr.

A single specimen from the shore, Hightown, May 1882 (J.W.E.). Crosby, abundant in spring 1884 (*Id.*).

Ocalea castanea Er.

One specimen from Eastham, November 1882 (J.W.E.).

Ischnoglossa rufopicea Kr.

One from Eastham in February last (J.W.E.).

Leptusa fumida Er.

Common under bark, Eastham and Spital (J.W.E.).

Aleochara ruficornis Grav.

I took a single specimen of this fine and scarce species at Eastham in May 1881.

Aleochara fuscipes Grav.

Common in dung.

Aleochara lanuginosa Grav.

Very abundant in dung.

Aleochara nitida Grav.

Common in dung.

Aleochara morion Grav.

A single specimen from Wallasey (J.W.E.).

Myrmedonia limbata Pk.

I have taken a few of this species at Crosby, along with **Myrmedonia canaliculata** F., which is very common on the sandhills there and at Hightown; also occasionally elsewhere.

Callicerus obscurus Grav.

A single specimen taken at Wallasey, May 1883 (J.W.E.).

Callicerus rigidicornis Er.

I have been fortunate in capturing two specimens of this rare species (kindly determined for me by the Rev. W. W. Fowler), one at Eastham, one at Aigburth, both in May 1883.

Chilopora longitarsis Er.

One specimen from Hightown, July 1883 (J.W.E.).

Oxypoda lividipennis Mann.

Common on walls around Bootle (F.K.); Eastham and Wallasey (J.W.E.).

Oxypoda opaca Grav.

Crosby (F. Archer); Wallasey, in dung (J.W.E.).

Oxypoda longiuscula Grav.

Prenton and Eastham, sparingly (J.W.E.).

Oxypoda nigrina Wat.

I have taken several specimens of this uncommon species at Wallasey and Leasowe, in spring.

Oxypoda alternans Grav.

I have a single specimen of this pretty species which I took at Eastham.

Oxypoda incrassata Muls.
A single specimen from Eastham (J.W.E.).
Homalota insecta Thoms.
One specimen from Hightown, May 1882 (J.W.E.).
Homalota luridipennis Mann.
Hightown (J.W.E.).
Homalota hygrotopora Kr.
Several (F.K.).
Homalota elongatula Grav.
A single specimen from Spital, May 1883 (J.W.E.).
Homalota volans Scriba.
Common.
Homalota gregaria Er.
Common at Spital (J.W.E.).
Homalota vestita Grav.
Common at New Ferry, in August, 1882; Hightown shore (J.W.E.).
Homalota graminicola Grav.
Common.
Homalota cæsula Er.
A single specimen of this scarce and very local species from Leasowe, April 1883 (J.W.E.).
Homalota circellaris Grav.
Common in moss at Eastham (J.W.E.).
Homalota plana Gyll.
Bootle (F.K.)
Homalota analis Grav.
Common.
Homalota parallela Mann.
Two from Wallasey, in April 1883 (J.W.E.).
Homalota trinotata Kr.
Bootle (F.K.); Wallasey (J.W.E.).
Homalota triangulum Kr.
Bootle (F.K.); Wallasey (J.W.E.).
Homalota boletobia Thoms.
Two specimens from Wallasey, May 1882 (J.W.E.).
Homalota nigricornis Thoms. (?)
I have a specimen, believed to be of this species, from Wallasey.
Homalota atricolor Sharp.
Wallasey, several specimens (J.W.E.).
Homalota nigra Kr.
One specimen, Liscard, October 1882 (J.W.E.).

Homalota longicornis Grav.
Common.
Homalota villosula Kr.
A specimen from Spital (J.W.E.).
Homalota atramentaria Gyll.
Common.
Homalota parva Sahl.
Wallasey (J.W.E.).
Homalota melanaria Sahl. (**sordida** W.C.).
Common.
Homalota aterrima Grav.
Common at Wallasey (J.W.E.).
Homalota pygmæa Grav.
A specimen from Wallasey (J.W.E.).
Homalota orbata Er.
A specimen of this scarce species from Wallasey (J.W.E.).
Homalota fungi Grav.
Very abundant in moss.
Homalota clientula Er.
With *H. fungi*, but not common.
Somatium flavicorne Lac.
I have a single specimen of this species from Bidston Marsh.

TACHYPORIDÆ.

Hypocyptus læviusculus Mann.
One specimen from Wallasey, March 1883 (J.W.E.).
Cilea silphoides L.
Common at Litherland (F.K.); Wallasey (J.W.E.).
Tachinus humeralis Grav.
Two or three taken in the district (F.K.).
Tachinus rufipes De G.
Very abundant in dung.
Tachinus subterraneus L.
Generally distributed.
Tachinus marginellus F.
Common in dung.
Tachinus laticollis Grav. (?)
A few specimens among the last species (J.W.E.).
(I have also a *Tachinus*, which the Rev. W. W. Fowler returns me as probably an immature *pallipes*, taken in this district by myself, but I do not know the precise locality.)
Tachyporus obtusus L.
Abundant.

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WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

Contents:

PAGE

Coleoptera of Liverpool District (Part 4: Brachelytra)—*J. W. Ellis, L.R.C.P., &c.* (conclusion) 49

Salmo Eriox: the Bull-Trout—*Rev. M. G. Watkins, M.A.* 59

Micro-Palæontology of the Northern Carboniferous Shales—*G. R. Vine:* (II. Polyzoa of the Redesdale Shales, Northumberland) .. 61

Ornithological Notes:— 58
Notes from Windermere and Bingley—*E. P. P. Butterfield;* Early appearance of Snow-bunting in Northumberland—*H. T. Archer;* Curious Nesting-place for Reed-bunting—*J. Backhouse, jun.;* Peregrine in Northumberland—*H. T. Archer;* Orange-legged Hobby near Doncaster—*A. Paterson;* Green Sandpiper at Masham—*Thomas Carter;* Tufted Duck at Rainworth, Notts.—*J. Whitaker, F.Z.S., M.B.O.U.*

Ichthyological Notes:— 60
Angler-fish at Whitgift near Goole—*Thomas Bunker;* Note on the Fishes of Grimsby about 1300—*R. D. Darbishire, B.A., F.G.S.*

Entomological Notes:— 57
Seasonal Notes on S.W. Yorkshire Lepidoptera—*G. T. Porritt, F.L.S.;* Erebia Blandina in Upper Wharfedale—*J. W. Carter;* Crambus inquinatellus near Huddersfield—*G. T. Porritt, F.L.S.*

Palæontological Note:— 66
Microscopic Examination of Crummach Lake-deposit—*H. Stolterfoth, M.A., M.D.*

Book Notice:— 67
(Hooker's Students' Flora, Third Edition.)

Notes and News 70

Rainfall 72

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BOOKS RECEIVED.

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*Experiments on Circulation of Water in Sandstone.—By T. Mellard Reade, F.G.S. 15 pp. reprint.	[Author.
*Naturalists' World, Sep.	[Editor.
The Humble Forms of Plant-life.—By J. A. Erskine Stuart, 14 pp.	[Author.
*Proceedings of Liverpool Lit. & Phil. Society, 1882-83.	[Society.
*Report & Proc. of Manchester Scientific Students' Assoc. for 1883.	[Society.
Report on Fossil Polyzoa.—By G. R. Vine. 12 pp. reprint.	[Author.
3rd Report on ditto. 18 pp.	[Do.
*4th Report on ditto. 49 pp.	[Do.
*5th and last Report on ditto. 123 pp.	[Do.
On species of Ascodictyon and Rhopalonaria from Wenlock Shales.—By G. R. Vine, 1884.	[Author.

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Tachyporus chrysomelinus L.
Abundant.
Tachyporus pallidus Sharp.
Three or four specimens (F.K.).
Tachyporus humerosus Er.
Occasionally.
Tachyporus hypnorum F.
Very abundant.
Tachyporus pusillus Grav.
Common on Bidston Marsh (F. Archer, J.W.E.).
Tachyporus brunneus F.
Very common, especially on Bidston Marsh.
Conurus pubescens Pk.
Common.
Conurus lividus Er.
Crosby (F. Archer); common about Bootle (F.K.) and Spital (J.W.E.).
Bolitobius atricapillus Steph.
Eastham Wood, in moss (R.W., J.W.E.).
Bolitobius trinotatus Er.
Eastham Wood, in rotten wood (R.W.), and one specimen in an agaric (J.W.E.); several specimens (F.K.).
Bolitobius pygmæus F.
Rock Ferry (F. Archer).
Megacronus cingulatus Mann.
One specimen, locality unknown (F.K.).
Megacronus analis Pk.
Crosby (F. Archer); Leasowe and Childwall (J.W.E.); Thurstaston (J. H. Smedley).
Megacronus inclinans Grav.
Eastham, among dead leaves, a single specimen (J.W.E.).
Mycetoporus splendidus Grav.
Rock Ferry (F. Archer); West Derby (R.W.); Wallasey (J.W.E.).
Mycetoporus lucidus Er.
A single specimen by sweeping near Walton Gaol (F.K.).
Mycetoporus longulus Mann.
Flaybrick Hill and Leasowe (J.W.E.).
Mycetoporus lepidus Grav.
West Derby (R.W.); Eastham, Spital, and Hightown (J.W.E.).
Mycetoporus nanus Grav.
A single specimen from Crosby, in April 1882 (J.W.E.).
Mycetoporus splendens Marsh.
Several from Wallasey (F.K.).

QUEDIIDÆ.

Heterothops binotata Steph.
Hightown, September 1863 (F. Archer).

Quedius fulgidus F.
Generally distributed but apparently not common. All my specimens are of the form *temporalis* Thoms.

Quedius impressus Pz.
Common.

Quedius molochinus Grav.
Tolerably common.

Quedius tristis Grav.
Common.

Quedius fuliginosus Grav.
Abundant.

Quedius nigriceps Kr.
One specimen, Eastham (F.K.).

Quedius peltatus Er.
One specimen from Eastham Wood (R.W.).

Quedius mauro-rufus Grav.
Common on the bank of the Alt, Hightown (J.W.E.).

Quedius umbrinus Er.
Two specimens from Aigburth (J.W.E.).

Quedius rufipes Grav.
Wallasey, several specimens (J.W.E.).

Quedius semiæneus Steph.
A few specimens from the fields around Westminster Road (F.K.); one specimen, Bidston Marsh (J.W.E.).

Quedius boops Grav.
Tolerably common and distributed.

Quedius scintillans Grav.
A single specimen from Eastham Wood (J.W.E.).

STAPHYLINIDÆ.

Creophilus maxillosus L.
Very common about carrion.

Leistotrophus murinus L.
A single specimen from Wallasey (J.W.E.).

Staphylinus pubescens De G.
Common under dry dung on the Wallasey Sandhills.

Staphylinus stercorarius Ol.
A single specimen from the Crosby Sandhills (R.W.).

Staphylinus cæsareus Ceder.
One specimen from Simmonswood Moss (J.W.E.).

Ocypus olens Müll.
Abundant.

Ocypus brunnipes F.
West Derby, Ince, and Crosby (J.W.E.).

Ocypus fuscatus Grav.
West Derby (R.W.); Wallasey (R.W., J.W.E.); Childwall (J.W.E.).

Ocypus cupreus Rossi.
Generally distributed.

Ocypus ater Grav.
Very abundant once, in 1881, at Bromborough Pool; occasionally elsewhere (J.W.E.).

Ocypus morio Grav.
West Derby (R.W.); Storeton (J. H. Smedley); Bromborough (J.W.E.).

Ocypus compressus Marsh.
Crosby (F. Archer); Leasowe (J.W.E.); Bebington (J. H. Smedley).

Philonthus splendens F.
Eastham, common in November 1882 (J.W.E.).

Philonthus intermedius Boisd.
Wallasey (J.W.E.).

Philonthus laminatus Creutz.
Abundant at Eastham, and occasionally elsewhere.

Philonthus æneus Rossi.
Abundant.

Philonthus succicola Thoms.
One specimen, locality unknown, but taken here (J.W.E.).

Philonthus carbonarius Gyll.
One specimen, Liscard (J.W.E.).

Philonthus decorus Grav.
Abundant in Eastham Wood.

Philonthus politus F.
Common.

Philonthus albipes Grav. (?)
A single specimen, Liscard (J.W.E.).

Philonthus umbratilis Grav.
I have a specimen taken somewhere in this district.

Philonthus marginatus F.
Common.

Philonthus varius Gyll.
Very abundant in dung (like most of the species of this genus) on the Wallasey Sandhills and elsewhere.

Philonthus sordidus Grav.
West Derby (R.W.).
Philonthus fimetarius Grav.
Common.
Philonthus cephalotes Grav.
West Derby and Crosby (R.W.); Kirkdale (F.K.); one specimen, West Derby (J.W.E.).
Philonthus ebeninus Er.
Common.
Philonthus corvinus Er.
West Derby (J.W.E.).
Philonthus fumigatus Er.
Railway bank, West Derby, plentiful (R.W.).
Philonthus sanguinolentus Grav.
Wallasey Sandhills (R.W., J.W.E.).
Philonthus bipustulatus Pz.
Common about Wallasey (R.W., J.W.E.).; on sallows, at Crosby, in spring (F.K.).
Philonthus varians Pk.
Plentiful.
Philonthus discoideus Grav.
A single specimen from Crosby (J.W.E.).
Philonthus vernalis Grav.
Wallasey (R.W., J.W.E.); Hightown (J.W.E.).
Philonthus trossulus Nord.
West Derby and Wallasey (R.W.); one specimen (J.W.E.).
Philonthus nigritulus Grav.
Common at Hightown (J.W.E.).
Philonthus (Cafius) xantholoma Grav.
Hightown (F. Archer).
Philonthus (Cafius) sericeus Holme.
A single specimen from Aigburth in May last (J.W.E.).
Philonthus (Actobius) signaticornis Rey.
I have taken a single specimen of this rare species at Hightown in May 1883.
Xantholinus glabratus Grav.
Common.
Xantholinus punctulatus Pk.
Common.
Xantholinus ochraceus Gyll.
Tolerably common.

Xantholinus atratus Heer.
One specimen from Wallasey (J.W.E.).
Xantholinus tricolor F.
One from the district, locality unknown (J.W.E.).
Xantholinus linearis Ol. (and var. *longiventris* Heer).
Abundant.
Leptacinus batychrus Gyll.
Litherland (F.K.).
Leptacinus linearis Grav.
Litherland (F.K.).
Othius fulvipennis F.
Common.
Othius melanocephalus Grav.
Common.
Othius myrmecophilus Kies.
Eastham Wood (R.W., J.W.E.).

PÆDERIDÆ.

Lathrobium brunnipes F.
Common.
Lathrobium boreale Hoch.
Common.
Lathrobium elongatum L.
Common.
Lathrobium multipunctum Grav.
Distributed, but not common.
Lathrobium quadratum Pk.
A single specimen from Hightown (J.W.E.).
Lithocharis melanocephala F.
Litherland (F.K.).
Lithocharis propinqua Bris.
Two from Bidston Marsh (J.W.E.).
Stilicus affinis Er.
Moderately common in wet places, as the banks of ponds.

STENIDÆ.

Stenus biguttatus L.
Eastham shore (J. H. Smedley).
Stenus guttula Müll.
Hightown (J.W.E.); shore above Eastham (J. H. Smedley).
Stenus bimaculatus Gyll.
Spital (J.W.E.).

Stenus Juno F.
Abundant.
Stenus foveiventris Fairm.
Spital (J.W.E.).
Stenus melanopus Marsh.
Spital and Eastham (J.W.E.).
Stenus canaliculatus Gyll.
Generally distributed.
Stenus æmulus Er.
One specimen from Eastham (J.W.E.).
Stenus pusillus Steph.
Spital (J.W.E.).
Stenus speculator Lac.
Abundant.
Stenus providus Er.
Rarely among the preceding species.
Stenus crassiventris Thoms.
Liscard and Wallasey (J.W.E.).
Stenus nigritulus Gyll.
West Derby (J.W.E.).
Stenus binotatus Ljun.
One specimen, the locality unknown, but taken within the district (J.W.E.).
Stenus bifoveolatus Gyll.
Eastham, Spital, and Wallasey (J.W.E.).
Stenus tempestivus Er.
One specimen from Spital (J.W.E.).
Stenus subæneus Er.
One specimen from Aigburth, in May 1883 (J.W.E.); Crosby (F. Archer).
Stenus impressipennis Duv.
Crosby (F. Archer); one specimen from Wallasey (J.W.E.).
Stenus impressus Germ.
Liscard and Bidston (J.W.E.).
Stenus cicindeloides Grav.
Common.
Stenus similis Herbst.
Common.
Stenus tarsalis Ljun.
Three from Spital (J.W.E.).
Stenus paganus Er.
One specimen from Wallasey, June 1883 (J.W.E.).

Stenus latifrons Er.
Common.

OXYTELIDÆ.

Oxyporus rufus L.
One specimen captured in fungus in the North Docks (F.K.). Probably introduced.

Bledius arenarius Pk.
Common on the wet sand of the sea-shore, where it forms shallow burrows.

Bledius subterraneus Er.
Crosby (F. Archer).

Bledius fuscipes Rye.
'Crosby, April 15th, 1870, the female at the bottom of a burrow 1 to 1½ inches deep; the male in a transverse burrow close to the mouth' (J. Kidson Taylor. *Entomologists' Monthly Magazine*, viii. 10). One specimen from Wallasey, and one from Hightown (J.W.E.).

Bledius fracticornis Pk.
Bidston Marsh and Hightown (F. Archer); Wallasey (J.W.E.).

Platystethus arenarius Fourc. (**morsitans** Pk.).
Common on the sandhills, and occasionally inland.

Oxytelus rugosus F.
Abundant.

Oxytelus insecatus Grav.
Spital and West Derby (J.W.E.).

Oxytelus laqueatus Marsh.
Abundant (like all the species of the genus, in dung).

Oxytelus sculptus Grav.
Rock Ferry (F. Archer); Wallasey (J.W.E.).

Oxytelus sculpturatus Grav.
Crosby (F. Archer); Spital, Hightown, and Wallasey (J.W.E.).

Oxytelus inustus Grav.
A single specimen from Wallasey (J.W.E.).

Oxytelus maritimus Thoms.
Wallasey (J.W.E.).

Oxytelus nitidulus Grav.
Common.

Oxytelus complanatus Er.
West Derby (J.W.E.).

Oxytelus tetracarinatus Block (**depressus** Grav.).
Abundant.

Oxytelus speculifrons Kr.
Wallasey Sandhills, but not common.
Trogophlœus bilineatus Steph.
One specimen at Hightown (J.W.E.).
Trogophlœus fuliginosus Grav.
One specimen, Aigburth (J.W.E.).
Syntomium æneum Müll.
Eastham, in moss (J.W.E.).
Coprophilus striatulus F.
'Two at Fazakerley, under roadside rubbish' (R.W.).

HOMALIIDÆ.

Lesteva longelytrata Goez.
Frequent in wet places.
Lesteva punctata Er.
Abundant in wet places near the shore.
Olophrum piceum, Gyll.
Eastham Wood (R.W., J.W.E.); Prenton (J.W.E.).
Lathrimæum unicolor Marsh.
Wallasey (J.W.E.).
Homalium rivulare Pk.
Abundant.
Homalium lævisculum Gyll.
Hightown (F. Archer).
Homalium fossulatum Er.
West Derby (R.W.); Wallasey (J.W.E.).
Homalium cæsum Grav.
West Derby (J.W.E.).
Homalium pusillum Grav.
Bidston Marsh (J.W.E.).
Homalium concinnum Marsh.
Wall of Anfield Cemetery (F.K.).
Homalium vile Er.
Common.
Homalium florale Pk.
Rock Ferry (F. Archer); one from Wallasey (J.W.E.).
Homalium striatum Grav.
Wallasey (J.W.E.).
Anthobium ophthalmicum Pk.
Rock Ferry (F. Archer).

PROTEINIDÆ.

Proteinus brevicollis Er.
Liscard and Eastham.

Proteinus brachypterus F.
Common.

Megarthrus depressus Pk.
Generally distributed.

Megarthrus affinis Mill.
Liscard, October 1882, common (J.W.E.).

Megarthrus denticollis Beck.
Liscard and Wallasey (J.W.E.).

MICROPEPLIDÆ.

Micropeplus margaritæ Duv.
Mrs. Ellis took this species abundantly on a wall at Liscard, in October 1882. I have not seen it before or since.

Micropeplus porcatus Pk.
One specimen on the bank of the river Alt, Hightown, July 1883 (J.W.E.).

ENTOMOLOGICAL NOTES.

Seasonal Notes on Lepidoptera (South-west Yorkshire).—It seems to be almost universally admitted that for lepidoptera the season of 1884 has thus far been a great improvement on its several immediate predecessors; and such, certainly, is my own experience. Mr. W. Laxton, of Bedford, informs me that *Apatura Iris* turned up commonly again in Monk's Wood, Huntingdonshire. *Oporabia filigrammaria* was in plenty and in fine variety, at rest on rocks on the moors at Greenfield, at the end of August and beginning of September; and *Celæna Haworthii* was in profusion in the same neighbourhood. Specimens of these two species, however, got quite out of their latitude, for *C. Haworthii* was taken flying in the College Field in the town here, far away I should think from any cotton grass; and Mr. Crosland also took a beautiful specimen of *O. filigrammaria* in New North Road, Huddersfield. Near the same part of the town, too, he found *Scoparia coarctalis* not uncommonly, and a brood of larvæ of *Vanessa Cardui*, which species, I may add, is now on the wing here.—Geo. T. Porritt, Huddersfield, September 17th, 1884.

Erebia Blandina, &c., in Upper Wharfedale.—On the 10th August of the present year I had the pleasure, in company with my friend Mr. Soppitt, of making acquaintance with *E. Blandina*, in its well known Yorkshire habitat at Grassington, in Upper Wharfedale. Several examples were noted in Grass Low Wood, close to the river; but in the High Wood they were to be seen sporting themselves in the sun, in open places, in countless numbers. *Pterophorus serotinus* Zell. was very common in the same locality, and two examples of *Miana expolita* were noted, but these I failed to secure. Generally speaking, lepidopterous insects were very scarce.—J. W. Carter, Bradford, September, 1884.

Crambus inquinatellus at Huddersfield.—A few days ago Mr. S. L. Mosley brought me specimens of this insect for examination. He found it commonly in August, at Bilberry Reservoir, near Holmfirth, Huddersfield; but it had not previously been noticed in the South West Riding.—Geo. T. Porritt, Huddersfield, Sept. 17th, 1884.

ORNITHOLOGICAL NOTES.

Ornithological Notes from Windermere and Bingley.—On Whit-Monday last, Mr. Soppitt and I were fortunate in finding two young Woodcocks, apparently about a week old, in a plantation on the banks of Windermere.

It is with pleasure I record a second occurrence of the Hawfinch in this district. It was seen flying about Manywells reservoir on several days in June, so that it was very probably breeding.—E. P. P. BUTTERFIELD, Wilsden, near Bingley, August 1st, 1884.

Early Appearance of the Snow-bunting in Northumberland.—A specimen of the Snow-bunting (*Emberiza nivalis*) was shot on this coast on the 15th September. This is a very early date for this bird, the usual time of arrival being from a fortnight to three weeks later.—H. T. ARCHER, Newcastle-on-Tyne, September 20th, 1884.

Curious Nesting-place for a Reed Bunting.—During the month of May this year, I found a nest of the above species built against the stem of a small Austrian pine in one of our plantations, at least four feet from the ground. I had observed the cock bird about, some days before I noticed the nest, and subsequently had more than one good near view of the hen. The nest was built of the ordinary materials, and, oddly enough, there were numbers of sites near the tree which one would imagine were far more suitable for a Reed Buntings' nest.—J. BACKHOUSE, Jun., West Bank, Holgate, York.

Peregrine Falcon in Northumberland.—A fine female Peregrine (*Falco peregrinus*) of the second year, was shot on the Simonside Hills of the Cheviot range last week.—H. T. ARCHER, Newcastle-on-Tyne, September 15th, 1884.

Orange-legged Hobby near Doncaster.—In the last week of April of this year, I had a fine female specimen of the Orange-legged Hobby (*Falco rufipes*) sent to me in the flesh to be set up. It was shot in Wadworth Wood near here, by the woodman, Mr. Clayton, and is perhaps worth recording.—A. PATERSON, Bird-stuffer, 25, Milton Street, Doncaster, September 6th, 1884.

Green Sandpiper at Masham.—A party of Green Sandpipers (*Helodromas ochropus*) passed here in the middle of August last, on their autumnal migration. I saw one of these birds at Marfield Pond (a sheet of water much frequented by wild-fowl), on the 15th, and another was seen feeding by the river-side on the 19th. On the 21st, one was shot at a rapid stream on the Yore, near Masham, and on the 24th a second specimen was shot on the edge of a small horse-pond, about a mile and a half further down the river. We first noticed these birds in this locality in 1880, when one was feeding on a sandbank by the river-side, on August 15th; none were seen in the two following years, but on the 16th of August, 1883, I flushed a bird from almost exactly the same spot. It is remarkable how nearly the dates of the records for the three years correspond, they being respectively the 15th, 16th, and 15th days of the same month.—THOMAS CARTER, Burton House, Masham, near Bedale, September 2nd, 1884.

Tufted Duck at Rainworth, Notts.—During last December I shot at a Tufted Duck. He was wounded, and settled on one of the lakes near here, but though we tried for him he beat us; and when next seen he appeared so slightly wounded that it was decided to leave him as an attraction for others of his kind. He never was able to fly, but in other respects seemed fairly well. In the spring he was joined by a duck, but whether they bred I do not know. After being from home for some time, I was much surprised to find when I returned that he had not assumed summer plumage, which all the other males of his kind had. He had lost his crest, but in all other respects was in as good plumage as ducks are in the breeding season. Would so slight a wound occasion this?—J. WHITAKER, Rainworth Lodge, Mansfield, Notts., September 10th, 1884.

SALMO ERIOX: THE BULL-TROUT.

By the REV. M. G. WATKINS, M.A.,
Barnoldby-le-Beck, Great Grimsby.

The *Salmonidæ* are as yet so little understood that I make no apology for introducing the above subject, although as a fisherman I know nothing whatever of the Bull Trout. It is singular, however, that when the tendency of science at present is to enlarge the number of species, in the case of this fish, which I believe is generally regarded by all practical anglers as a distinct species, the latest views are for denying its specific rank. Thus Clarke and Roebuck's *Handbook of Yorkshire Vertebrata*, a most useful book for all north-country naturalists, says, page 126: 'The Bull Trout, 'thoroughly and generally believed in as a distinct species in York-'shire, is very abundant in the Esk and the Tees. Dr. Günther, 'however, states that all specimens of the so-called "Bull Trout" 'that he has examined have been referable to *S. trutta* (Salmon 'Trout), *S. Cambricus* (Sewin), or *S. Fario* (Common Trout).' Dr. Günther himself, in the *British Museum Catalogue of Fish* (Vol. VI., *Salmonidæ*, 1866), writes that 'the Salmonidæ, as a family, is 'geologically of the most recent creation, and perhaps composed 'of forms not yet specifically differentiated.' In the list of English members of that family he enumerates '*S. Cambricus*. Sewin in 'Wales, or Bull Trout, or Blue Poll, or Peal, or Salmon Peal.' If then, north-country anglers may change the name of their Bull Trout from *S. Eriox* to *S. Cambricus*, it seems they are entitled to regard the Bull Trout as a distinct species after all. The term 'Sewin,' it should be noticed, is used in two widely different senses. By some it is the general term for every migratory Salmonoid, except the Salmon; by others (as by Dr. Günther), it is confined to a special form, the true Welsh Sewin. That there is a peculiar kind of big Salmonoid which in spring and more frequently in autumn ascends rivers, especially the Tweed, and commits much havoc among the spawning beds of the true Salmon, is unquestionable. In the north of Northumberland it is known as the Coquet Trout, and a great Norwegian angler told me that in August it is not worth while fishing his river in Norway for Salmon. Enormous numbers of Bull Trout then run up it, and persist in taking the fly, while their flesh is very poor, and the play they give much inferior to the true Salmon. Yarrell calls the *S. Eriox*, 'Bull Trout, Roundtail, or Sewin,' and claims 'several specific peculiarities' for it, and even 'generic differences' if, as he says, 'M. Valenciennes be correct.' For myself, I cannot see much in his distinctions; but I believe that the wide range and

peculiarities of the Bull Trout show that it is a distinct species. Omitting the Charrs and the Grayling, I hold that the British *Salmonidæ* consist of *Salmo Salar* (the true Salmon), *S. Trutta* (Sea Trout), *S. Cambricus* or *Eriox* (Bull Trout in the north; Sewin proper in Wales), and *S. Fario* (Common Trout). Dr. Günther divides this last into two distinct varieties (and my experience in Scotland bears him out),—*S. Fario Gaimardi*, the northern form, with larger and more distinct red and black spots, or rather blotches; and *S. Fario Ausonii*, the southern and central European form—our ordinary Brook Trout, including too the Thames Trout. For more exact anatomical differences, see the *British Museum Catalogue, ut supra.* I add some synonyms of the Bull Trout, mainly from Mr. Satchell's list,—'Black Trout, Coquet Trout, Grey Trout, Peal, Pug Trout, Roundtail, Sea Trout, Sea Truff, Skurf, Warkworth Trout, Whitling, Sewin, Brownlug.' A good account of the Bull Trout from the scientific and the angling points of view is much wanted. Will no one write it for the 'Naturalist'?

ICHTHYOLOGICAL NOTES.

Angler-fish at Whitgift.—A specimen of the Angler (*Lophius piscatorius*) was caught on the 27th May, at Whitgift, six miles below Goole, and was on view next morning at a fishmonger's shop in Goole. It was about twenty inches long. I have not heard of any former capture of this fish in the Ouse, and its occurrence forty-three miles from the coast seems to me worthy of record.—THOMAS BUNKER, Goole, 28th May, 1884.

Note on the Fishes of Grimsby about 1300.—To fill up part of the long journey to Grimsby on the 3rd inst., I took with me the Early English Text Society's reprint of the 'Lay of Havelok the Dane,' thinking that, apart from the special interest of renewing the story of the foundation of that ancient town on the spot, I might be able to pick out again from the record of the notable old fisherman the names of the fish he made his fortune by catching and selling. Unfortunately, the author of the Lay, writing about 1300, must be taken to enumerate what he saw in the markets of his day, rather than what Grim caught in the year 600. The list is not a long one. The Yorkshire Naturalists' Union was not yet. Still, as a list of the year 1300, it is perhaps not amiss to reprint it in the *Naturalist*. The following are all the indications of this particular fauna which I have observed:—

749. Grim was a fisher swithe[1] god,
And mikel couthe[2] on the flod;
Mani god fishe thereinne he tok,
Bothe with nett and with hok.
He took the sturgiun and the qual,[3]
And the turbut and lax[4] withal.
He tok the sele and the whel;[5]
Keling he tok and tumberel,
Hering and the makarel,
The butte,[6] the schulle,[7] the thornbacke.

[1] Exceedingly.
[2] Knew of—could do.
[3] Whale or grampus.
[4] Salmon.
[5] Whale or grampus. Cod and porpoise.
[6] Halibut. [7] Sole?

771. When he tok the great laumprei he sold it in Lincoln.

895. On the bridge at Lincoln, the Earle's cok bought and got young Havelok (then an unknown porter's lad) to carry up for him—

. . . . A carte lode
Of segges,[8] laxes, of playces brode;
Of grete laumpris, and of eles.

[8] Cuttle-fish (Seches).

We saw tumberels ourselves; and last week a 'hwel,' thirty-three feet long, was fool enough to go into the dock at Goole.—R. D. DARBISHIRE, Manchester, September 7th, 1884.

Naturalist,

MICRO-PALÆONTOLOGY OF THE NORTHERN CARBONIFEROUS SHALES.

By GEORGE R. VINE,
Attercliffe, Sheffield; *Secretary of the British Association Committee on Fossil Polyzoa.*

II.—POLYZOA OF THE REDESDALE SHALES, NORTHUMBERLAND.

So far as I am able to judge from the material sent to me by Mr. Howchin, the Polyzoa of nearly the whole of the Northern Shales are only found in minute fragments. Generally speaking the fragments are well preserved, and the characters of the species are easily recognised; but even some of these are coated over with a secondary deposit of calcareous matter, similar in certain respects to the secondary deposit which coats over the Polyzoa of Permian age. I do not know the cause of this, but I have observed that the Polypora of the Scotch beds are occasionally thickened by calcareous layers, not, however, in the same way as the coatings found on species in the Redesdale Shales.

In speaking of the Polyzoal remains, I have been compelled to use the word 'abundant.' I use it, however, in a comparative, rather than in a literal sense, and in relation to the other organisms which are found in the shales. The gradational scale would run thus:—Polyzoa, abundant; Entomostraca, moderately abundant; Foraminifera, rather rare.

With regard to this last group of organisms, I relied chiefly for the compilation of the list (*Naturalist*, Sept. 1884, p. 39) on Mr. H. B. Brady's Monograph; but as I had in my cabinet several species of Foraminifera that were not included in the column devoted to 'Redesdale,' I indicated their presence thus: *v. In all probability, before the conclusion of these papers, I may have to revise the list; but so far as published only with regard to the Lagenæ, as Professor Lebour points out to me that possibly No. 25 and No. 27 (see list) are wrong identifications: these two species being Upper rather than Lower Bernician forms.

The Polyzoa of the Shales are rather characteristic, for though a number of species are found, generally speaking these belong to very limited groups. The *Pinnatoporæ* are well represented. Fragments of *Fenestella* are rather rare; *Polypora* is, so far as I can judge, entirely absent; and some other groups are represented by occasional fragments. In this paper, then, I shall consider that it will be far wiser to give a little more detail in describing the groups and species than will be necessary when dealing with the other Northumberland Shales; and though I shall give ample references to the literature of the subject, perhaps the two papers on Yorkshire and Derbyshire

Polyzoa, which are published in the 'Transactions of the Yorkshire Geo. and Polytec. Society' for the years 1882 and 1884, may be more accessible than others of my writings to geological students. In these papers I have described species found in Derbyshire and North Yorkshire, and it may be well to compare the list of species in the present paper with the lists given in the papers referred to. The groups are classified, and the species are arranged, in accordance with that formulated in my Fourth British Association Report on Fossil Polyzoa, 1883.

Sub-order CYCLOSTOMATA Busk.

See Part III. Brit. Mus. Catalogue of Cyclostomatous Polyzoa, Hincks, Brit. Marine Polyzoa.

Fam. *FENESTELLIDÆ* (restricted).

Fourth Brit. Assoc. Rep. Foss. Polyzoa, 1883.

ZOARIUM forming large or small fenestrated or non-fenestrated expansions. ZOŒCIA arranged biserially in the branch; tubular, but slightly truncated* at the distal extremity; orifice circular, opening on one side only. BRANCHES united by dissepiments, or free.

Genera: FENESTELLA Miller and Lonsd.; PTILOPORA M'Coy; and PINNATOPORA Vine.

Genus FENESTELLA Miller and Lonsd.

It is impossible to give any special details of species belonging to this genus. The few fragments that I have collected I place without the least hesitation under the name of M'Coy's well-known and widely-distributed *Fenestella plebeia* M'Coy. One or two specimens may be referred to another species, but I should not be inclined to hazard an expression of opinion adverse to the above unless I had better evidence than I now possess.

Genus PINNATOPORA Vine.

Fourth Brit. Assoc. Rep. Foss. Polyzoa, 1883.

= Glauconome: M'Coy; Young; Vine, in papers on Carboniferous Polyzoa. (Not *Glauconome disticha* Goldfuss.)

ZOARIUM pinnated; with secondary branches likewise pinnated; but rarely fenestrated by the inosculation of pinnæ. ZOŒCIA tubular, arranged biserially, originating immediately beneath, or in a line with the keel. CARINA feebly developed in some, well developed in other species, ornamented with the bases of spines or plain; no secondary pores. OŒCIA, an inflated cell (?).

1 **Pinnatopora elegans** Young and Young.

= *Glauconome elegans* Young and Young, Proceed. Nat. Hist. Soc. Glasgow, March 1875, pl. xvi. fig. 4.

= *G. elegans* Vine, 'Carb. Polyzoa,' Proceed. Geo. Polyt. Soc. Yorkshire, 1882, vol. vii., p. 334, pl. xvi. fig. 4.

* This has reference to the cell as seen in sections.

Fragments of this species are present in the shales, but are very rare. The beautiful ornamentation of the surface of the specimens are not so well preserved as in the Scotch forms from Hairmyres, but the character of the type species—two cells between each pinna on either side of the stem—is sufficiently distinct. The species may be easily recognised.

2 **Pinnatopora retroflexa** Young and Young.
= *Glauconome retroflexa* Young and Young, Proceed. Nat. Hist. Soc. Glasgow, pl. ii., figs. 8-10; pl. iii., figs. 11-13.
= *Glauconome retroflexa* Vine, Proceed. Geo. Polyt. Soc. Yorkshire, 1882, vol. vii., p. 335.

This is a rare species in this locality, though in Yorkshire it is fairly abundant, in the Scotch Shales very abundant. The species is easily identified, on account of the backward flexure of the short pinnæ. In the Scotch specimens the cells are deeply buried in the branch, and the keel is very prominent, and the ornamentation of the surface is very beautiful. None of these features are absent in the Northumberland specimens.

3 **Pinnatopora flexicarinata** Young and Young.
= *Glauconome flexicarinata* Young and Young, Proceed. Nat. His. Soc. Glasgow, pl. ii., figs. 1-7.

The beautiful ornamentation of the surface of the Zoarium is not so prominent in the English as in the Scotch specimens. There is ample evidence in this as in other fragments of Polyzoa, that the whole have been water-worn and very much compressed. The Entomostraca of the same shales, however, are full and plump; so also are some of the Foraminifera. The species is rather rare.

Fam. *DIPLOPORIDÆ* Vine.
Fourth Brit. Assoc. Rep. Foss. Polyzoa, 1883.

ZOARIUM fenestrated, or partly free and fenestrated. ZOŒCIA arranged biserially in the branches, opening on one side only. Supplementary pores, or foramina, in all the species of the various genera, but in one group the foramina are found on the reverse also.

4 **Acanthopora stellipora** Young and Young.
= *Glauconome stellipora* Young and Young, Quar. Jour. Geol. Soc., Dec. 1874, p. 682, pl. xi., figs. 5-11.
= *G. stellipora* Vine, Proceed. Geo. Polyt. Soc. Yorkshire, vol. vii., 1882, p. 333.

The fragments of this species are very well preserved, and in some the characters are pretty perfect. Mr. A. W. Waters, in a paper on the 'closure' of the cells of Cyclostomatous Polyzoa* directs atten-

* Linnæan Society's Journal—Zoology, vol. xvii. 1884, p. 401.

tion to the peculiarity of the structure in Palæozoic Bryozoa. The present species has a denticulated orifice, and I have noticed that the closure of some of the cells appears to be nothing more than a thin pellicle of calcareous matter—so transparent that the denticulated orifice can be seen beneath. I cannot as yet comprehend the value of this closure in the economy of the species, but it is well to note the fact whenever it is observed. The 'closure' is a common feature in both the Fenestella and Polypora of the Carboniferous rocks, but I have not noted it before in this group.

5 **Acanthopora stellipora** var. **spinosa** Young and Young.

This variety is also present in the shales, but so worn that it is with difficulty that the characters can be made out. It is only on account of the peculiar spinose keel—which is fairly preserved in one or two fragments—that I direct attention to it at all.

6 **Diplopora marginalis** Young and Young.

= *Glauconome* (*Diplopora*) *marginalis* Young and Young, Proceed. Nat. Hist. Soc. Glasgow, March 1875, pl. iii., figs. 14-21.

In the Scotch Hairmyres Shales this species is a very delicate one—in the Gair Shales it is rather more robust—but in the Redesdale Shales it is both delicate and robust. It is rather rare, and unless a little care is exercised the fragments may be passed over—especially the more minute of these.

7 **Actinostoma fenestratum** Young and Young, Quart. Journal. Geol. Soc., Dec. 1874, p. 682, pl. xl., figs. 1-4; pl. xli., figs. 12-16.

This is another of the beautifully stellate species abundant in the Scotch beds—rather rare in the English. Fragments of the species may easily be mistaken for *Acanthopora stellipora*, only if a little patience is exercised in the observation it will be found that there are no lateral pinnæ—but instead, delicate portions of the dissepiments wholly destitute of pores.

8 **Hyphasmopora Buskii** R. Etheridge, jun.

Ann. Mag. Nat. Hist. Ser. IV., vol. xv., pp. 42-45, pl. iv., fig. 1-4.
Carb. Polyzoa North Yorkshire, Vine (op. cit.) p. 337, pl. xvi., fig. 6.

This very characteristic polyzoon is perhaps one of the most beautiful from the Scotch Shales. In the Shales of North Yorkshire—in the Redesdale Shales, and also in others of the Northumbrian Shales this species is present, but it is rare. In another paper sent on to the Yorkshire Geol. Soc.—but not yet published—I have drawn attention to a new ally of this species; so far as I am aware, new to the British Carboniferous rocks. I have named it *Streblotrypa Nicklesi* Ulrich (MS.), from the fact that the American specimen sent to me by Mr.

Nickles, the discoverer, said that Mr. Ulrich had named it in his honour, and I have no wish to disturb the name. In all probability specimens will be found in other Northern Shales, and whenever found it might easily be mistaken for a specimen of *H. Buskii*.' The difference will be found in the shape of the orifice of the cell, and also in the peculiar punctures under the area of the cell.

Sub-order **CRYPTOSTOMATA** Vine.

Fourth Brit. Assoc. Rep. on Foss. Polyzoa, 1883.

ZOŒCIA tubular, subtubular, in section (occasionally) slightly angular. Orifice of cell surrounded by vestibule, concealed.

Fam. *ARCANOPORIDÆ* Vine.

In a genus founded for the reception of certain obscure forms—Arcanopora—(Abstracts of the Geo. Soc., London, No. 424, June 1882, p. 109. For Silurian and Carboniferous Species)—I placed the *Flustra*? *parallela* Phill. The species has been variously located, as *Sulcoretepora* by M'Coy—and as *Cystodictya* Ulrich—In the last paper of Mr. Ulrich—April 1884—(Journal of Cincin. Soc. Nat. History. Genus published, Oct. 1882)—he places the genus *Arcanopora* Vine, as a synonym of *Cystodictya*. My own name has several months priority of his, though the description was not properly published until I published it in full in my B. A. Report, 1883. I have no desire to press my claim for the above genus, especially as species are much more abundant in the American Carboniferous series of rocks than in our own.

CYSTODICTYA Ulrich.

Jour. Cincin. Soc. Nat. Hist., April 1884.

= *Arcanopora* Vine: Fourth Brit. Assoc. Rep. Foss. Polyzoa.

'ZOARIUM like *Stictopora*, but with wider interstitial spaces. Sections show that the intertubular spaces are occupied by a vesicular tissue. Sub-carboniferous.' (op. cit., October 1882.)

9 **Cystodictya parallela** Phill. sp.

= *Flustra* ? id. Geol. Yorkshire.

= *Sulcoretepora* id. M'Coy and authors generally.

This well marked Carboniferous species has a very wide distribution in British Carboniferous rocks, and I am glad that Mr. Ulrich has been able to identify the species in American Carboniferous rocks also. It is present in the Northern Shales, though not by any means abundant. As Mr. Ulrich says, sections of the species show that between cells—or in the intertubular spaces—a loose vesicular tissue may be observed, and though not so apparent in the American species *C. lineata* Ul., its presence shows how closely the American is related to the British form.

Oct. 1884.

Fam. *RHABDOMESONTIDÆ* Vine.

Fourth Brit. Assoc. Rep. on Foss. Polyzoa, 1883, p. 45 of Report.

ZOARIUM rod like, branching. ZOŒCIA opening on all sides of the branch, tubular, attached by their proximal extremities to a central rod: orifice of cells obscured by vestibule: wall of vestibule externally ornamented by spines or not.

Genus RHABDOMESON Young and Young.

New Carb. Polyzoa, Young and Young, Ann. Mag. Nat. Hist., Ser. IV., vol. xiii., pp. 335-339, 1874.

10 **Rhabdomeson gracile** Phill. sp.

= *Millepora gracilis* Phill., Palæoz. Foss.

This species is rather abundant in the Northern Shales; and as specimens vary very much, the student is recommended to examine the type very carefully, as in the Yorkshire Shales we have specimens of an apparently allied species which is closely related to, if not identical with, the American Carboniferous *Rhombopora persimilis* Ulrich. The Yorkshire specimen will be fully described in the Yorkshire Geo. and Polyt. Soc. Transactions.

11 **Rhabdomeson rhombiferum** Phill., sp.

= *Ceriopora* id. Phill., Geol. Yorkshire.

Ann. Mag. Nat. Hist., Ser. IV., vol. xv., pp. 333-336, Young and Young.

This is a far more delicate species than the above—especially so as regards the English Shales—though in some of the Scotch Shales the species may be found almost as bulky as some specimens of *R. gracile.*

In dealing with these same species in the other shales, it will not be necessary to give so full details as is given now. It is very evident, however, that the micro-palæontology of our rocks is year by year claiming a larger share of attention than has been given to the study in the past. Because of this, I claim that far more attention should be directed towards the study of the Polyzoa of our rocks—minute though the fragments be—than the species have yet received from investigators. *(To be continued.)*

Microscopic Examination of Crummach Lake Deposit.—Professor G. A. Lebour, in the August number of the *Naturalist*, described a pure white marl, like crumbly chalk, as existing at the bottom of this once upland lake. As I have examined the bottom of several Welsh lakes, and have found in them white deposits rich in diatoms, I thought that diatoms ought to be found in the Crummach Lake deposit. Professor G. A. Lebour kindly sent me a small box of the deposit, which I have carefully examined, with the following results:—It consists of about 95 per cent. of carbonate of lime, which was dissolved out with hydrochloric acid. The remainder was treated for diatoms, with a result *nil.* On examining the material under the microscope without chemical treatment, it was found to consist of fragments of freshwater shells, and fine amorphous grains of limestone. I have since heard from Professor Lebour that the lake was surrounded with limestone hills, and these must have supplied the great mass of white powder, which certainly at first looked as if it would be rich in diatoms. I know of no diatomaceous deposit in England, although there are plenty in Scotland, Wales, and Ireland.—HENRY STOLTERFOTH, M.A., M.D., Sci. Sec. of the Chester Society of Natural Science, 60, Watergate, Chester, August 26th, 1884.

Naturalist,

BOOK NOTICES.

'The Student's Flora of the British Islands.'—By Sir J. D. Hooker; THIRD Edition (Macmillan & Co., 1884), pp. xxiii and 563. Price 10s. 6d.

This new edition is not only larger by fifty pages than the last, but bears the marks of thorough revision, and generally of improvement, on almost every page; making it an indispensable accompaniment to Babington's Manual, 8th Edition, for the field botanist and student of plant-distribution. In spite of its bulk, by the use of small type and thin paper (globe 8vo. in size), it is still not too large to slip conveniently into the side-pocket. More information of all sorts concerning British Plants, in such a small compass—from the pronunciation and derivation of generic names, to the range and distribution of species—it would be impossible to find. The whole work has in classification been adapted to *Genera Plantarum*, and collated with Nyman's recent *Conspectus Floræ Europææ*, and *Topographical Botany*, 2nd Edition, so that the work has in verity been brought up to our knowledge at the beginning of 1884. This, however, is not an altogether unmixed advantage. It takes *time* for our views of newly-discovered forms to gradually crystallize down into undebatable truths as knowledge of them grows. The disadvantage alluded to is particularly evidenced in the Naiadaceæ of the work before us, where the 21 '*species*' of *Potamogeton* defined are anything but equivalent in value. The prominence elsewhere given to 'sub-species' is somewhat departed from, *P. polygonifolius* Pourr. following *P. natans* L. as an equally distinct integer; whilst *P. Zizii* Roth., which bears a somewhat similar relation to *P. lucens* L. that *P. polygonifolius* Pourr. does to *P. natans* L., *is* reduced (we do not contend wrongly) to sub-specific rank. *Potamogeton Griffithii* A. Benn., again—a recently discovered plant of the Welsh lakes, which has not yet been observed with mature fruit, and of which, with our present knowledge, it would not be too strong an assertion to declare a probably attenuated state of *prælongus*,—is lined as an undoubtedly distinct species, without a hint even that its specific value is as yet in the debatable ground of controversy. An opposite case to this, showing how views of 'species' gradually mature, is to be seen under *P. pusillus* L., where *P. mucronatus* Schrad. (long accounted a distinct species, and so given in Bab. Man., 8), is rightly reduced to sub-specific rank, as a broader-leaved race of *P. pusillus*, under the title of *P. Friesii* Rupp.

It will thus be seen that where the author has availed himself of the service of specialists, and allowed them the revision of his MS., the execution is unequal, and a certain clashing of views (inconsistent with one another) has been inevitable. Excluding the debatable groups, such as the *Batrachium* section of Ranunculus, we have nothing but approval to accord to the most masterly way in which the not narrow range of British forms are treated. As one would expect from the world-wide extent of the author's knowledge, in his limitation of species he has wisely adhered rather to broad, evident, and structural differences for his characters, than to those finer distinctions (often comparative ones, and liable to vary) in which the 'splitter' so much delights. As he himself remarks (p. 5), in reference to the aquatic Ranunculi, Rosa, Rubus, &c., 'Of the characters attributed to these and their subordinate forms by critical authors, I find some variable, others valueless, and still others deceptive.' In the Roses and Hieracia, however, the matured experience of Mr. J. G. Baker has given a consistency to the limitation of forms (which are lucidly defined, however artificial their characters) not observable in the Potamogetons or the Willows. In the arrangement of the latter, Anderson and Boswell (olim Syme) have been followed, we are told; with a novelty in the result—chaotic in appearance, although perhaps none the less truly mirroring Nature for that—that makes this synopsis especially invaluable as a companion to that in Babington's Manual, 8th Edition, for the lights which its contrasts throw upon this puzzling genus. Babington defines 30 species, Hooker 18; the latter boldly but, as we have long thought, warrantably suppressing Salices *Russelliana*, *ambigua*, *Smithiana*, *stipularis*, and *rubra*, as all hybrids.

A few minor omissions, such as the paucity of information given here and there in regard to the derivation of botanic names, does not detract appreciably from the value of the book. What we have is accurate, but we find 'Etymology doubtful' in

many cases where we should have thought it was sufficiently evident to have given the generally accepted derivation—as, for example, in the case of DAPHNE, which, so far from being at all uncertain, is simply the old Greek name for Laurel, very like unto which are the coriaceous leaves of several of the species.* We notice that the softer sounding *Prunella* is restored to the earlier *Brunella*, without, however, any hint that in that form it was connected with the German *Bräune*—the word for Quinsy, for which ailment an infusion of *Brunella* was in very early times esteemed almost a specific. Examples might be multiplied, but we will only instance one other: the derivation of *Trichomanes* is scarcely 'obscure'—surely it comes from *thrix* (hair) and *mainomai* (passion or desire, fury), because the Roman girls had (or were said to have had) a passion or a *penchant* for displaying in their hair this or some other species of 'Maidenhair Ferns.' (In an article on the Etymology of Plant Names we hope, later, to return to this subject.)

We are glad to note that the Decandollean genus *Ficaria* has been adopted for our single British species *Ranunculus Ficaria* L., and that Mr. Thomas Hick's observations thereon have not passed unheeded (although not referred to), since we find for the first time in a British Flora 'leaves opposite' forming part of the generic limitation.

A certain amount of 'resurrectioning' has been indulged in, in comforming the species-names to those of Nyman, &c., albeit the earliest has not invariably been adopted. It will doubtless provoke research on the part of students, but at first it will seem not a little strange and awkward to have to call *Carex vulgaris* Fr. by Gay's not-in-many-respects-preferable name of *Goodenovii*. In like manner we we have *Brassica sinapis* Visiani, in place of the familiar *Sinapis arvensis* L.; and *Viola persicæfolia* Roth. superseding *V. stagnina* Kit. Polygalæ *austriaca* and *uliginosa* are referred, without doubt, to *P. amara* L., but, singularly enough, the Kent plant is stated to have blue and the Teesdale plant rosy flowers, whereas the reverse is the case in all the specimens we have seen; *Silene inflata* Sm. becomes *S. Cucubalus* Wibel.; Withering's *Stellaria glauca* is rejected in favour of Ehrhart's *palustris*; *Sagina saxatilis* Wimm. becomes *S. Linnæi* Presl., with *S. nivalis* as a subordinate form; *Hypericum dubium* Leers. becomes '*H. quadrangulum* L. (in part), Fries.'—objectionable because the restriction is hard to remember. *Geranium pyrenaicum* L. is replaced by *G. perenne* Huds.; *Melilotus officinalis* W. is suppressed in favour of *M. altissima* Thuill.; *Blysmus compressus* Panz. becomes *Scirpus Caricis* Retz., the Lincolnshire coast being recorded for *S. rufus*; the aptly named *Carex stellulata* Good. is changed for *C. echinata* Murr.; *Calamagrostis stricta* is accorded a genus to itself as *Deyeuxia neglecta* Kunth.; whilst the order EMPETRACEÆ follows that of the Holly in place of preceding the Spurges. Under *Tilia platyphyllos* Scop.—the old title of *grandifolia* Ehrh.—we are told that the late H. C. Watson considered it 'indigenous' in 'Hereford, Radnor, and W. York.,' a mistake that would be serious if it were not an absurdity; Mr. Watson, in *Top. Bot.* 2., quoting Babington, Ley, and the late James Ward (for North-West, *not* West York) saying, 'These are the only three counties known to me as resting on good authority in support of the true nativity of this Lime. It is reported for many other counties . . . . usually with indications in distrust of its being really an indigenous tree. In Surrey its leaves are much more damaged by spring frosts than are those of the *T. intermedia*.' Surely one can read between the lines grave doubts here, especially when even *Tilia parvifolia* (for which many more counties are given as having it native, including an express dictum to that effect from J. G. Baker), was considered by Watson 'a doubtful native.' Babington himself, too, in the last two editions of his Manual, places the mark (†) against the larger-leaved Lime, as 'possibly introduced' at any rate. Many more examples of changes of name might be given did space permit, but we trust enough have been cited to rouse the curiosity of students and send them to the work itself: it will well repay the closest study, marking as it does (along with the completion of *Genera Plantarum* and of Nyman's *Conspectus*) an epoch in the progress of Field Botany. To say that we could like to go on quoting from almost every page to the last is the most significant tribute we can pay to its general excellence.

For some unexplained reason, we have anything but a strict adherence to the now generally admitted wholesome rule of priority; the earliest specific name has,

* In other cases, as in this, we cannot well get further back, the root, probably of Aryan origin, having become lost.

however, been adopted in so many cases that it seems a pity any exceptions should knowingly have been made. A preference for the felicitous *Ranunculus hirsutus* Curt. over *R. Sardous* can be understood; as may *Calluna vulgaris* 'Salisb.' (*Erica vulgaris* L.), the Linnean specific appellation being for once tacked on to Salisbury's generic limitation, rather than adopt De Candolle's tautological compromise—*Calluna Erica*. There must be bounds to the application of every rule, and, that of priority notwithstanding, *some* sort of appropriateness must be insisted on. We might not now call a cabbage a Seakale, though it should turn out to have been its original name! But where no insuperable objection forbids, the older should be preferred. *Glaucium luteum* Scop. should, so, be replaced by the earlier *G. flavum* Crautz.; *Polygala depressa* Wend., must be *P. serpyllacea* Weihe; *Astragalus Hypoglottis* L. give way to *A. danica* Retz.; *Lotus uliginosus* Schkhr., alike with *L. major* Sm., give precedence to *L. pilosus* Beeke; and *Carex rostrata* Stokes stand before *C. ampullacea*, happy as the latter name is from the striking resemblance of its perigynia to the long-necked big-bellied Roman pitcher.

Of absolute error there is very little: *Thlaspi perfoliatum* is *not* 'extinct' (*vide* p. 41) in Oxfordshire. Mr. Druce recently found it in plenty near Charlbury. *Thlaspi occitanum* Jord. occurs in many other spots in Yorkshire besides the old one of 'Settle,' and also in N. Somerset, Westmoreland, and Durham.

Althæa hirsuta, L. is credited to North Somerset as 'wild,' a fact not in Bab. Manual, 8th Ed. The *Senecio spathulæfolius* of that work is stated not to be identical with De Candolle's continental plant of the same name, but is referred to Syme's var. *maritima* of *Senecio campestris* as 'a tall form with broadly-toothed leaves.' A similar large cymose-flowered form occurs in quarries near Ancaster, Lincoln. We are also told that *Lobelia urens* is found in Cornwall, and that *Arum italicum* occurs from Cornwall to Sussex.

The forms of *Callitriche verna* L. are curiously classified. *C. hamulata* Kuetz., and *C. pedunculata*, DC., usually considered a variety of it, here both take rank as sub-species, equal to *C. vernalis*, *C. platycarpa*, and *C. obtusangula*; whilst *C. truncata* Guss. is reduced to a mere variety of *C. autumnalis* L.—a course hardly intelligible, since it seems to result from two incompatible lines of view. *Per contra*, the expositions of the sequence of forms in *Pyrus Aria*, and in *Rosa canina* and *arvensis* (so unsatisfactory in Babington's Manual) are excellently well done. Of the Willow-herbs and the Mints we are told what students in the field soon discover to their confusion, that hybrids abound, and so, individuals varying almost indefinitely, are difficult to discriminate.

Lathræa is taken out of the Broom-Rape order, and included in Scrophulariaceæ under the Euphrasieæ, with other root-parasites. The 'truly wild' Irish *Sisyrinchium* is described as *angustifolium* Miller—the earliest aggregate name (1771), instead of *S. Bermudiana* L., the author remarking that 'it differs entirely from the Bermudian plant'. *Juncus diffusus* Hoppe is sunk in *J. glaucus* as a hybrid between that and *effusus*, perhaps not without reason, but it is still accorded specific rank by Babington.

Under *Carex distans* L. we have, as a sub-species only, *C. fulva* Good., this name being retained (the late Mr. Pryor's demonstration notwithstanding) in preference to Hoppe's *Hornschuchiana*; *C. xanthocarpa* Degl. being suggested as a hybrid with *C. distans*; *C. flava* with which (in presence of *fulva*) it is almost invariably mingled where it occurs, not being named at all as a possible co-efficient. *Carex Leesii* Ridley (*saxumbra* Lees), accepted by Dr. Boswell as probably a distinct species on account of its fusiform fruit and peculiar glume, is considered only a 'drawn out' shade-growing form of *C. pilulifera*; whilst *C. ornithopoda* Willd. sinks to a sub-species of *C. digitata*, though its occurrence in West Yorkshire (Mackershaw Wood, Ripon, *Herb. Borrer*), as well as in Derby, is duly registered. Both *Spartina alterniflora* Loisel. and *S. Townsendi* are sunk in an aggregate *S. stricta*, it being stated that American series show similar variations.

Lastly, all the most recent British discoveries appear to be faithfully incorporated. Now, in addition to Mr. Fowler's Lincolnshire *Selinum carvifolium* L., we note the following novelties accepted as either native, or sufficiently widespread and well established to be deemed worthy of a place in the British Flora—apart from that of the Channel Islands, the species only found there being, however, included according to the indefensible custom of late years, whilst the plants of the Faröe Islands are still excluded:—*Ranunculus ophioglossifolius* Vill. (S. Hants);

Potentilla Norvegica L. (the weed now so common from Kirkstall to Snaith, by canals); *Erythræa capitata* Willd. (as a sub-species of E. Centaurium, the anomalous insertion of its stamens suggesting its being 'a heteroclite form' only); *Juncus tenuis* Willd. (Herefordshire); *Naias marina* L. (the Norfolk broads); *Carex ligerica* Gay (a slender form of *arenaria*, occurring inland as well as on the coast, with female flowers at the top of the spike); *Carex trinervis* Degl. (eastern coast); *Carex frigida* Allioni (Aberdeen—'a rare instance of an Alpine Scotch plant not being Scandinavian'); *Anthoxanthum Puelii* Lecoq. et Lamotte (an introduction with foreign grass-seed, now rapidly diffusing itself); *Agrostis nigra* With.; *Glyceria declinata* Brébiss.; and *Lycopodium complanatum* L., type, accepted as having occurred in Gloucester and Worcester—now extinct on Hartlebury Common—with our common *L. alpinum* given as a sub-species of it.

We miss only any mention of *Naias graminea* Del. and Carices *pelia* O. F. Lang, and *limula* Fr. *Centaurea Jacea* L. is given only in the list of excluded species, yet with the remark which seems somewhat inconsistent, of 'found in Sussex, probably indigenous.' Other exclusions among species usually or recently claimed as British, are *Lavatera sylvestris*, *Malva borealis* (Goole, Preston, and many other places), *Hieracium pratense* Fr., *Crepis nicæensis* Balb. (Harrogate, for many years), and *Poa sudetica* Hœnke., all of which hold their ground, we believe, although not indigenous integers in our flora. *Euphorbia pilosa* L., by some inadvertence, has a place *both* in the body of the work and in the list of excluded species; whilst *Carex ustulata* Wahl., kept in by Babington, is here relegated to the same *olla podrida*, the author apparently not being aware that the very unduly-discounted George Don is not the sole authority. Specimens undoubtedly gathered on Ben Lawers within about forty-two years, by the late Surgeon Newnham, are in more than one herbarium; and the writer found one amongst a number of other carices sent him to be named by F. C. King, of Preston, gathered on the same hill within five years, unrecognised at the time, the collector being a comparative tyro. We are sorry to see the Bedfordshire 'casual'—*Medicago lappacea* Lam.—find a place as an *indigenous* variety of *M. denticulata*, itself in inland localities rarely more than an impermanent introduction with wool or grain.

NOTES AND NEWS.

We are making arrangements for preparing the annual Bibliographical Summary of records and papers relating to the natural history and physical features of the ten northern counties of England, which is to be one of the distinctive features of our Journal. In doing this we hope to enlist the co-operation of our readers in general, and more particularly should we be obliged if the authors of papers or records would favour us with copies or notices of them.

In this connection, Professor G. A. Lebour has laid us and our readers under further obligation to him by generously undertaking to furnish the titles (with a brief notice of the gist of the contents of each) of papers relating to the geology of the counties of Northumberland and Durham.

The fourteenth annual meeting of the Wakefield Naturalists' and Philosophical Society was held on the 3rd of September. The annual report showed that the society was making steady progress, although the attendance at the meetings was of a fluctuating character. Various additions to the recorded fauna of the Wakefield district, and important gifts of specimens for the projected local museum, were announced, after which reference was made to the great losses which the society had sustained by the deaths of their President (Mr. Joseph Wainwright), and of Mr. C. F. Tootal. After the adoption of the report, the officers were elected as follows:—President, Mr. M. E. Naylor; Vice-presidents, Rev. A. Chalmers, M.A., and Messrs. J. Spurling, J. L. Chaplin, and G. G. Ianson; Treasurer, Mr. A. Lupton; Librarian, Mr. H. Emmett; Financial Secretary, Mr. G. Ramsden; Hon. Secretary, Mr. E. B. Wrigglesworth; Committee, Messrs. Rushforth, Fallas, Shaw, Garnett, Willis, Wilcock, Harrison, Stephenson, Binks, Toms, Chapman, and Keighley. The President and the Rev. A. Chalmers were appointed to represent the society on the General Committee of the Yorkshire Naturalists' Union.

Dr. J. A. Erskine Stuart, who, since he became President of the Heckmondwike Naturalists' Society, has done much to promote its prosperity, has arranged to read before it a series of papers as follows:—October 4th, 'Medicinal Plants'; November 1st, 'Linnæus'; November 29th, 'Poetry and Flowers'; and December 7th, 'The Holly.'

Although the news is in all the newspapers, we cannot refrain from calling the attention of our readers to the claim which the newly-founded Marine Biological Association has upon their sympathies. It has long been a reproach to wealthy England that it has had no institution upon its shores to do the work which the Naples Zoological Station does for the Mediterranean Fauna, and now that the association has been founded it is the duty of all who can afford it to contribute towards the successful establishment of its first laboratory. The location of this has been determined for Plymouth Sound by the timely offer from the Corporation of that town of £1,000 in money and a free site on the foreshores of the Sound. Some day, possibly, we may see a similar laboratory set up in the north. An official memorandum, emanating from the Council, which appeared in *Nature* for the 7th August (at page 350), gives full details of the Association's intentions and present prospects.

The 'Entomologist' Synonymic List of British Lepidoptera is just out. We hope to notice it in an early number.

A botanist of some little note in his own humble way, of whom no obituary notice has appeared, died on the 29th April last, at 51, Spooner Road, Sheffield, aged 55 years. This was Mr. Amos Carr. Originally of Frant, on the borders of Kent and Sussex, he afterwards resided near Warwick. For some time he was a rural postman, and whilst such collected most of the critical plants of the districts in which his work lay. For some years he had lived in Sheffield, and although a bootmaker, and much tied to his trade, he contrived to collect indefatigably information as to the Roses, Brambles, and Willows of the Sheffield district. Special help from him in this respect is acknowledged at pp. 359 and 360 of 'West Yorkshire.' He added *Circæa alpina* to the flora of the Rivelin valley, and re-discovered or verified many of the old stations in that district, first noticed by Jonathan Salt, *Hypericum dubium*, *Scutellaria minor*, *Arbutus uva-ursi*, and *Cotyledon umbilicus* for example. Under a plain appearance and unassuming manner he hid a kindly heart and an almost poetic nature, but with it a most scrupulous accuracy and love of truth. Considering his limited advantages, he added much towards our knowledge of British Plants; and although he was never, we believe, lucky enough to discover a species new to the country, he was the first to find *Carduus acaulis* (the stemless thistle) on Kiveton Common.

The veteran Yorkshire botanist, Richard Spruce, Ph.D., F.R.G.S., who is living in seclusion at Castle Howard, and who in his youth did so much good work in exploring the cryptogamic riches of his native county, is publishing through the medium of the 'Transactions of the Botanical Society of Edinburgh' (of which it constitutes the 15th volume) the results of his labours among the hepatics or liverworts of the tropical regions of South America—amid the varied and luxuriant vegetation of which he spent fourteen years (1849-1862) of the prime of his life. The first portion of the monograph—which is intituled 'Hepaticæ Amazinæ et Andinæ'—was issued last April. This part, bulky as it is, treats of three genera only, *Frullania*, *Jubula*, and *Lejeunia*, the latter enormous genus with its numerous species ranged under 37 subgenera, occupying nearly the whole of it. The second part, which will not be many months before it appears, will include (besides the remainder of the descriptions of genera and species and 16 plates) the introduction to the whole work, wherein one may expect to have such generalizations on geographical distribution, classification, and generic affinities as the matured judgment and critical acumen of one of our best authorities on the hepaticæ well qualify him to make.

A fungus foray on a small scale, in the direction of which Mr. George Massee, F.R.M.S., will take the leading part, will be held in the Selby district on Wednesday the 22nd October. It is proposed to investigate the woods on the East Riding side of Selby during the day, and to assemble for tea at that town in the evening. It is expected that several of the leading botanists of Yorkshire will take part, and Y.N.U. railway privileges are being asked for. The arrangements are in the hands of Mr. W. Norwood Cheesman (The Crescent, Selby), to whom persons desirous of being present should apply for information. It is hoped that the botanists present will learn much, and that the gathering may be but a prelude to a more important fungus foray in 1885.

The first published report of the Malton Naturalists' Society shows it to be in a very flourishing state. The monthly meetings are well attended, and the annual conversazione is much appreciated by the inhabitants of the town. The Society, which was founded in 1880, and is the direct outcome of the stimulus which the Yorkshire Naturalists' Union gave by meeting in the town in that year, possesses an excellent little museum, housed in one of the rooms of the Literary Institute. The Society now numbers about ninety members. Many of them have contributed liberally to the museum, which, thanks chiefly to Mr. W. H. Hudleston, F.R.S., the president, and to Mr. S. Chadwick, is particularly rich in the geological and mineralogical department. The fittings for the museum were provided by means of special subscription. The Society has never looked back since its formation, and its present condition is highly creditable to its working members.

RAINFALL FOR AUGUST 1884.

STATION & OBSERVER.	Height of Rain-Gauge above Sea-level.	Total Rainfall for Month.	No. of Days on which Rain fell.	Total Fall to Date.				Heaviest Single Day's Fall.	
				In 1884.	Average of Past Years.	No. of Years.	Years of Average.	Amount.	Date.
	Feet.	Inches	Days	Inches.	Inches.	No.	Years.	Inches	
Derringham, Hull.—Wm. Lawton	10	1·62	7	12·68	14·13	34	1850-83	0·99	31st.
Goole.—John Harrison...	25	1·12	4	13·20	—	9	1875-83	0·76	31st.
Scarborough.—Allan Rowntree	130	1·54	6	13·94	16·85	18	1866-83	0·62	11th.
Baldersby, Thirsk.—W. Gregson	100	1·44	10	19·38	—	—	—	0·34	29th.
Masham.—Thos. Carter..	269	1·62	10	21·08	—	—	—	0·39	27th.
Shadwell, Leeds.—Geo. Paul	500	1·04	9	13·84	—	—	—	0·38	27th.
Leeds.—The Museum ...	183	0·94	11	16·66	15·60	30	{1853-62 / 1865-84}	0·36	31st.
Horsforth.—James Fox	350	1·12	8	17·93	20·31	15	1870-84	0·40	31st.
Barnsley.—Dr. Sadler...	350	1·83	11	14·80	—	2	1882-83	0·64	31st.
Wentworth Castle.—Wm. Fisher	520	1·84	10	—	—	2	1882-83	0·71	31st.
Ingbirchworth.—Mr. Taylor	853	1·36	12	23·61	—	2	1882-83	0·48	27th.
Dalton, Huddersfld.—J. W. Robson	350	1·33	8	17·26	20·41	18	1866-83	0·41	31st.
Thorpe, Halifax.—F. G. S. Rawson	365	1·64	10	23·80	—	2	1882-83	0·49	27th.

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MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

Contents:

PAGE

Variation in European Lepidoptera.—*W. F. de Vismes Kane, M.A., M.R.I.A.* 73

A New Maritime Form of Wood Vetch (VICIA SYLVATICA V. CONDENSATA)—*George C. Druce, F.L.S.* 85

Capture of a Rudolphi's Rorqual at Goole—*Thomas Bunker* 87

A Winter Visit to the Farne Islands—*Rev. H. H. Slater, M.A., F.Z.S., &c.* 89

The Yorkshire Naturalists' Union at Spurn Point 92

Mammalian Notes:— 88
Black Rat at Newcastle—*Thomas Southwell, F.Z.S.*; Albino Mole in Nidderdale—*W. Storey*; Harvest Mice in captivity—*G. W. Oldfield, M.A.*

Ornithological Notes:— 91
Breeding of the Hawfinch in North Yorkshire—*Thomas Carter*; Occurrence of the Barred Warbler on the Holderness Coast—*Rev. H. H. Slater, M.A., F.Z.S.*

Crustacean Note:— 93
Pasiphæa Sivado at the mouth of the Dee—*C. F. Fish.*

Botanical Notes:— 86
Clematis Vitalba at Ledsham, Yorkshire—*W. Whitwell*; Flora of the English Lake District—*J. Gilbert Baker, F.R.S., F.L.S.*

Book Notices:— 94
Grove's Synopsis of Bacteria and Yeast Fungi; Harris on the Honey-bee; Sonnenschein's Penny Handbooks, &c.

Notes and News 95

Rainfall (Yorkshire and Notts. Stations) 96

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VARIATION IN EUROPEAN LEPIDOPTERA.

By W. F. DE VISMES KANE, M.A., M.R.I.A.,

Sloperton, Kingstown, Dublin; Member of the Entomological Society of London; &c.

(An Address delivered in connection with the Barnsley Naturalists' Society's Exhibition, March, 1884.)

The subject is one of great interest and very wide scope, and might well occupy a lifetime of laborious scrutiny and observation. I hope that I may be the means of opening new avenues of thought to some whose field of study has been perhaps necessarily confined to our British fauna, and even in a great degree to that of the portion of the country in which they dwell. Not that I would presume for a moment to undervalue or depreciate the results of the researches of those whose intelligence and industry reflect such honour on the various local societies throughout the country. I refer to that class of observers whose occupations leave them scant opportunities for natural history investigations; but it is the part of those who have leisure, and the opportunities of travel, to supplement particular observations by deduction, generalization, and analysis.

Thus it is that the schoolboy may take his share in the construction of the temple of science, and the hard-working artisan (as in the case of the Scotch naturalist Edward, and others), as well as the busy professional man, may recreate their energies, whether in the field or the study, each striving in his way to extend our perception, and widen our grasp of the infinite wisdom and goodness of the Great Creator.

My subject needs, in the first place, definition.

From one point of view there is no such thing as variation of species; since the most rigid and painstaking scrutiny of Nature leads little by little, slowly but inevitably, it seems to me, to the conclusion that there is no such thing as species, if we mean by the term a primeval type which has permanent and unaltered persistence of characteristics. But if we define a species to be a group, similar among themselves throughout their life-history and sexual development, with a common inherited characteristic difference in some stage of that development from all other groups of individuals, we then can fix upon types of sufficient permanence to render of great interest all records of their variation, since such records will in many cases eventually constitute the history of fresh species.

It is with regard to such alterations of characteristics, giving birth to incipient species, that my remarks will apply; and I would point out how valuable and accessible a field for study of natural phenomena is presented by Entomology, offering as it does for examination a class

of living organisms of comparatively high order, subject to triple transformations, exposed to a wider range of complex natural external conditions (by reason of their powers of migration by flight) than most others, and far exceeding all in number and diversity of species.

Let us, in the first place, take a glance at some groups of Lepidoptera which challenge retrospective inquiry into their past history.

Every intelligent observer of Nature will, in process of time, be brought face to face with the fact that there are, apparently, always two controlling forces at work among living organisms. One is the law of persistence (which is Darwin's law of inheritance); the other, the law of variation (which is Darwin's law of divergence of character.) The question which meets the observer on the threshold of his investigations, is whether variations ever exceed the limits of species, so that one type merges by imperceptible gradations into another; and if this be admitted as undeniable, then he has to consider whether even generic distinctions form inexorable limits to variation. The solution of these problems is to be sought in patient and reverent investigation of the works of the Almighty, and not in dogmatic speculation for or against any preconceived opinion. Now, there are certain genera of Lepidoptera which, by the difficulty they offer in the way of specific determination, seem to point to the conclusion that originally they have diverged from but one or two parent stocks; bearing, as they do, so close a family likeness.

There is, for instance, the family of the Hesperiidæ, or 'Skippers,' the most difficult group to study of all the European Rhopalocera. In England there are but seven species, six of which belong to well-characterised genera. But *Alveolus*, 'the Grizzled Skipper,' alone in this country represents the genus *Syricthus*, comprising (to say nothing of varieties) fifteen or sixteen European species, of uniform black and white pattern, over whose distinctions the most celebrated entomologists, past and present, have disagreed and wandered in a labyrinth of chaotic synonyms. Boisduval writes, 'The confusion is so great that it is much to be desired that no further species may be described'; while Dr. Staudinger, in his Catalogue, enumerates no less than six questionable synonyms and descriptions of one species and its supposed varieties. When, therefore, the English collector looks at our little chequered insect, he may be grateful that its parents-in-law and a horde of blood relations were not introduced with him into this island.

The next group I shall instance as bearing strong cumulative evidence that what are now very distinct species were ancestrally allied, is the genus *Erebia*, only two representatives of which, fortun-

ately for British naturalists, are found in Great Britain. We have here again, a group of numerous species (comprising no less than twenty-nine European forms), coloured uniformly and monotonously with brown, relieved by a fulvous band of eye-spots; and some of these species are, moreover, very inconstant, both in the number and intensity of their markings. On examination we can trace characters running through five or six species, more or less modified until they disappear. Compare, for instance, the median band on the under side of the hind wing of *E. Ligea*; a wavy streak of white reaching from the costa to the centre of the wing, where it terminates in an angular form, with the similar bands of *E. Medea*, *E. Neoridas*, and *E. Euryale*: and note how *E. Medea* and *E. Neoridas* retain, in most specimens, a costal whitish trace, while in *E. Euryale* the terminal whitish angle only is retained, and this only in occasional specimens.

Compare, too, a good series of *Cœnonympha Davus* and its variety *Philoxenus* (*Rothliebii*) and intermediate aberrations, noting the median band of the under surface of the hind wing and the eye-markings sometimes completely absent, and sometimes most conspicuous; compare such a series, I say, with one of *C. Pamphilus*. Here, too, we have a median band, in England generally reduced to a central patch, and no eye-markings, but on the Continent sometimes having a continuous band across the wing, suffused, it is true, but explanatory of the patternless trace left in the English form, and bearing eyes often well and distinctly delineated. *C. Arcanius*, too, is as variable as *C. Davus* in the band of the hind wing, and is linked with *C. Satyrion* by an intermediate *forma Darwiniana*, having the upper side of one and the under side of the other. But I must not weary you with examples. A remarkable phenomenon in, shall I say, the history of species, is that occasionally all or most of the insects of a wide district, though grouped under different genera, are found to be stamped by some common peculiarity, such as that notable configuration of wing found by Mr. Wallace to prevail among the Pieridæ and Papilionidæ of the Isle of Celebes; thirteen out of fourteen of the latter, and ten of the former, having the costa of the fore wing elbowed near the base, or the apex pointed and sometimes hooked. Or, again, the striking prevalence of a white neuration of the undersides of South Russian Rhopalocera: for instance, *Erebia Afer*, *Triphysa Phryne*, *Satyrus Anthe*, *S. Autonoë*, *S. Hippolyte*, and *Epinephile Narica*, belonging to four different genera. Such facts seem to me strongly suggestive of similar peculiarities having had a similar derivation.

I will now take up my subject proper.

Nov. 1884.

Variations from recognised types may be classed either as temporary, though recurrent; or persistent and hereditary. In the former case they are named aberrations, and are chiefly remarkable as indicating a latent tendency in the type to diverge in that particular direction. These occasional aberrations, although recurrent from time to time, cannot rank as varieties until they interbreed with each other, which is, of course, impossible when the aberration is confined to one sex (as in *Argynnis Paphia* female ab. *Valezina*), and give rise to a race inheriting their peculiar characteristics.

But when the divergence from the type grows persistent and hereditary, it becomes a variety. And to know when it ceases to be a variety, and constitutes a distinct species, we must introduce a physiological test. So long as it is capable of fertile union with the type, and of thereby producing a fruitful progeny, it remains a variation, while the question of determining which is the type and which the variation must be left to entomological experts. Directly, however, such interbreeding ceases, or produces infertile ova—or sterile hybrids—it has established itself as a species.

Having thus defined in a popular manner the arbitrary abstractions which we call species, aberrations, and varieties, let us run over briefly some of the chief phenomena of divergence observable among the order Lepidoptera generally.

In the first place there is the simple variability of size, which is I think, more frequently and most strikingly observable among the Rhopalocera. One chief cause of this is doubtless the stint, or unsuitable nature of their food when in the larval condition. All who have bred specimens know this result of accidental or experimental neglect. Climate acts in a like way when it stunts the growth and luxuriance of the food-plant, either by an ungenial cold and lack of sunshine, or, in hot countries, by parching the ground and depriving the roots of moisture. We have this strikingly exemplified in the dwarfed Alpine representatives of genera whose species have different ranges of altitude. Compare the dwarf *Erebias*, *Asteria*, *Gorge*, *Mnestra*, *Tyndarus*, and *Melampus*; which are confined to the higher Alpine altitudes, with their larger congeners of the lower levels; and place beside a *Lycæna* of Central Europe, a specimen of the same species bred on an arid hillside of France, Italy, or Greece, and you will see the same effect springing from opposite influences. I have met with an interesting specimen of *Melitæa Artemis*, whose history is as follows:—In the county of Clare, in the West of Ireland, a friend of mine went to visit a locality on which, he was told, a 'shower of worms' had fallen. He assured me that, on his approach, the road was black with small larvæ

migrating in search of food; and on his arrival at the fields in question, they were black with a swarming carpet, waved into ridges here and there where the insects were deeply massed together. This imago is a survival of that vast host, having escaped the starvation which overtook the larger number; and was caught the following year at the place in question. It corresponds in size, though of not quite so blanched a coloration, with the Alpine var. *Merope*, whose stunted food-plant and short summer has in lapse of ages affected permanently its size and depth of colour, but not altered the drawing of the pattern.

Climate has a decided tendency to influence coloration. As we approach the Arctic circle, or ascend to the perpetual snow-line on Alpine summits, we find among the Heterocera that the delineation is accentuated, and the characteristic tones deepened; while, on the contrary, the Rhopalocera suffer in colour and distinctness of marking. Take for instance the moths of Iceland, Finland, and North Russia; look at *Crymodes Exulis*, *Pachnobia Alpina*, *Anarta Melanopa*, and the moths of Shetland, characterised by excess rather than diminution of pattern; and again the pale blurred *Melitæa* and other Rhopalocera of the same regions. And I cannot help here referring (when I am speaking of this group) to the remarkable Alpine species, *Melitæa Cynthia*. This insect, whose female is extremely similar to that of *M. Artemis*, has in the male a considerable area of white, though it retains the general pattern of *M. Artemis*. I cannot help suspecting that here we have a remarkable and extreme instance of the bleaching influence which such climates produce very generally, and on this group of butterflies in especial.

But on the other hand, as we travel *southwards*, we find the colours of the Rhopalocera deepened and enriched: the orange of *Melitæa Didyma* in Germany becoming fiery red along the Mediterranean littoral, and even varying on the northern and southern slopes of the Alps. *M. Artemis* glows with the warmer tints of var. *Provincialis*, *Gonepteryx rhamni* is replaced by the orange-flushed *Cleopatra*, while their females are undistinguishable, and *Anthocharis Cardamines* by the vivid *Euphenoides* of Provence. White becomes replaced by metallic lustre, as in the *Cœnonymphidæ* and in the *Anthocharis* group. Among the *Lycænidæ*, too, the ocelli of *L. Lycidas* (Trapp), from Switzerland, become illuminated with gold, giving the South European form of *L. Zephyrus* (Frivaldsky). Climate, therefore, appears to me to affect colour and pattern merely in intensity, rather than in essential character.

The influence of food next demands our attention, and I am afraid that I shall differ from many who by their practical experience

in rearing larvæ are perhaps more competent judges than myself, when I state my disbelief that change of diet is generally so potential a cause of aberration in the imago as many naturalists think. It may perhaps be a remote cause of tendencies which by inheritance become intensified into a decided character, but we have not many data to go upon. Who can say what other terrestrial conditions may not have equal potency? There are, however, some species which show some immediate results from a change of food, not only in the larva but the imago; as is, I believe, the case with *Abraxas Grossulariata*. And in some very variable species of Geometers, notable phenomena present themselves occasionally. For instance, in the cabinet of the Rev. Joseph Greene, there is a bred specimen of *Cleora Lichenaria* which he fed on the well-known orange lichen of our walls, with the result that the imago is variegated with orange blotches. But I consider this and other instances which occur among such species as display themselves with outstretched wings on walls and tree trunks when at rest, are merely examples of the adoption of protective colouring, assimilating the pattern to the object upon which the insect is in the habit of resting, as, for instance, *Hypsipetes Elutata* when found on heathery tracts, which loses the leaf green of the sallow feeding type, and adopts a more protective colouring. Let me commend to your study, too, the gradations of tone observable in *Gnophos Obscurata* taken on chalk, limestone, clay, and darker soils, as it deepens from the whitish grey '*Pullata*' to a sombre speckled black. In such a case, have the mineral constituents of the soil affected the insect indirectly through the medium of its food? or has the obscure and mysterious law to which I have referred affected the insect directly? With regard to experiments made to test the whole question, I may be permitted to suggest that it is not likely that polyphagous feeders such as *Arctia caja*, which is *accustomed* to a varied diet, would be affected so much as those of more restricted appetite. It seems to me, too, that the silkworm of commerce might contribute to our stock of information on this subject. Domesticated for centuries and fed on two different species of mulberry, and also in this country on lettuce and other foliage, it would be interesting to know whether its colour or pattern has changed. Already we perceive that it seems to have lost the habit of flight in both sexes, and in the lapse of time perhaps would become entirely apterous! The colour of the silk is said to be affected by the use of certain foliage, but I cannot vouch for the fact.

Lastly, excess of food seems more likely than variety to produce divergence, if we are to judge from experiments made in other fields of nature; and it might be worth while trying the effect of rank and

luxuriant foliage, and at the same time that of stunted and impoverished growth.

We now come to the consideration of those two controlling laws which affect all natural organisations, whether vegetable or animal—namely, those which control the transmittal of parental forms and characteristics to their offspring. The first of these natural laws is that of inheritance or persistence, and this is so all-powerful in some species that we find their individuals identical in every part of the world to which they have spread. *Vanessa Antiopa* and *Lithosia pulchella* are, I believe, cases in point.

But there is a second natural law which acts apparently in antagonism to the former, and its operation is to effect some slight alteration in each individual. And sometimes we find a large portion of a group affected by a common tendency to vary in a similar direction; and this seems to point frequently only to a secondary phase of operation of the first law, inasmuch as most of such cases are merely evidences of a tendency to revert to some ancestral peculiarity which had become effete. The Lycænidæ have in more than one species a tendency for two or more spots on the under surface of the fore wing to coalesce, and form a band or streak. Several species and varieties of *Polyommatus* have the characteristic copper colour shot with violet, which tendency has developed itself permanently in *P. Alciphron*, etc. Among the *Zygænidæ* we find the crimson varied by yellow, and of this we have extreme examples in some local English aberrations of *Z. Filipendulæ*, and *Z. Trifolii*, in which the red is wholly supplanted by yellow. Several continental species, *Z. Fausta* and *Z. Carniolica*, etc., have the crimson spots encircled more or less deeply by yellow. Again, the purple which tinges the under surface of the hind wing of several species of *Argynnis*. varies in intensity occasionally, and it runs in different degrees of strength through several species. *Arg. Amathusia* shows the character in its fullest development, while it shades down through *A. Dia* (Weaver's fritillary), *A. Ino*, and *A. Paphia* into a mere trace, while *A. Pandora*, a species nearly related to *A. Paphia*, has lost this trait altogether. A remarkable aberration of *A. Paphia* was taken a few years since at Pembroke, by Mr. Barrett, with the under surface of the hind wing completely shot with purple, thus illustrating what may be called a generic aberrant tendency. Darwin formulates these phenomena thus:—'Distinct species present analogous variations, and a variety of one species often assumes some of the characters of an allied species, or reverts to some of the characters of an early progenitor.'

Aberrations once having occurred, the law of heredity steps

in and often secures its transmittal either permanently or intermittently through successive generations, especially if the peculiarity be of advantage. And since aberrations are sometimes dependent on sexual causes, we find that an insect occasionally develops two distinct forms of one sex, while the other remains constant to type. This is what is termed 'sexual dimorphism,' and is familiar to English lepidopterists in the case of the female ab. *Valezina* of *Argynnis Paphia*. The normal female of *A. Paphia* is always of a more sombre colouring than the male. The form *Valezina* is therefore nothing but an extreme development of this sexual tendency. On the Continent this aberration crops up occasionally, but I doubt if it is anywhere found in any degree of abundance except in the New Forest in England. The genus *Colias* presents instances of female dimorphism. The following species have occasional female forms of bleached coloration:—*C. Edusa* ab. *Helice*, *C. Palæno* ab. *Lapponica*, *C. Erate* ab. *Pallida*. I will not, however, weary you with names, but refer to the remarkable case of this sexual tendency presented by the exotic *Papilio Memnon*, as described by Wallace. The females of this insect vary greatly, but may be divided into two groups—namely, those which resemble the male in shape, and those which differ entirely from him in having developed a large spoon-shaped tail on the hind wing, of which no rudiment is visible in the ordinary type of either sex, and in being also characterised by a distinct colour. That they are all the offspring of the same form has been proved by their having been all three bred from the same batch of eggs. The females of several exotic Papilionidæ develope similar phenomena under the influence of mimicry, but I have not time to refer to examples. Before I pass from the subject, I may remark that Darwin ('Origin of Species,' ch. v., p. 150), speaking of secondary sexual characters, remarks that these are more rarely found in the female than in the male, which rule however, I do not think holds good in the order Lepidoptera as in other fields of zoology.

But the phenomenon of Dimorphism occurs quite independently of sex. Species occasionally throw off aberrations presenting peculiar characteristics which recur from time to time. Such dimorphic forms are to be met with in *Tephrosia Biundularia* and *T. Crepuscularia*, I mean the dark melanic variety with a pale marginal scalloped line. The history of this variety, (for it has now become established) we owe to the industry of Mr. Llewellyn, of Swansea, who has given a detailed description of the experimental breeding of this form in the *Entomologists' Monthly Magazine*, vol. xvii. By mating a male and female of this aberration, and continuing the process for five years, he at length succeeded in breeding ninety-seven specimens

of this dark form of *Tephrosia crepuscularia*! Another year he bred 250 imagos from ova of this variety, but twenty of them reverted to the pale type. We have here the history of a recurrent aberration becoming established as a true variety; which might, in process of time, in favouring circumstances, become a species. The melanic forms of *Amphidasis betularia* and *Xylophasia Polyodon* are, I think, inconstant; but a very interesting and beautiful case of local dimorphism occurs at Digne, in the Basses Alpes, where the abnormal form *Honnoratii* is occasionally procurable by rearing a large number of the larvæ of *Thais Rumina*. As this dimorphic form is merely produced by extreme effusion of the normal crimson colouring, it is likely enough to occur elsewhere. A most remarkable aberration has been produced latterly in what I may call our now domesticated insect *Liparis dispar*, an account of which has, I believe, appeared in one of our Natural History magazines. It is almost unique in affecting the contour of the wing, and not the colour and pattern. In rearing a brood of *L. dispar* it has been found that a considerable number of the imagos emerge with a curious deformity in the hind wing, and sometimes the fore wing also. This consists of the loss of a semicircular portion from the outer margin, forming a gap in the continuity. When this affects only a single wing, or occurs irregularly on more than one, it appears a mere monstrosity; but specimens also occur which have corresponding gaps in both hind wings. Now if by interbreeding their disposition became regular, uniform, and hereditary, we might have a very distinct species formed within the lapse of a few years. The contour of the wings is so rarely modified by variation, at least in temperate climates, that such a case as this possesses more than ordinary interest.

There is another class of dimorphism which has been termed seasonal dimorphism, and an extreme illustration of it is to be found in the case of *Vanessa Levana*, and its summer representative, *V. Prorsa*, which differs so greatly from the spring insect as to have been formerly classed as a distinct species. And if the pupæ of *V. Prorsa* be subjected to a very low temperature, we are surprised by the appearance of a third and intermediate form, ab. *Porima*. This phenomenon in some cases may have given rise to varieties. For instance, the familiar *Bombyx quercus*, in countries where it is obliged to hibernate in the larval condition in consequence of short summer seasons, appears as *B. callunæ*. *Ephyra punctaria*, *Selenia illunaria*, *S. lunaria*, and others exhibit, more or less, this seasonal dimorphism.

I shall not detain you with many observations on the occurrence of monstrosities, deformities, and hermaphroditism, as scarcely coming within the scope of my paper. Hybrids seem to be irregular

attempts to accomplish 'per saltum,' and in a single generation, what the laws of nature prescribe to be effected only step by step; that is, the inauguration of a new species. The penalty for such an infraction of her law is extinction, and accordingly hybrids are infertile. Boisduval has remarked that though many of the *Zygænidæ* belonging to closely allied species frequently couple unnaturally, yet that he has invariably found the results of such unions are infertile, although the ova of this genus are very easy to hatch; and this is the more remarkable considering how many of these species are linked by almost imperceptible gradations to each other.

Deformities in the imago seem to be usually the result of some injury suffered in a previous condition of existence. Experiments have been made by a Belgian entomologist by which it was found that when a leg of the larva was cut off, the corresponding member of the imago was wanting on emergence.

Hermaphroditism assumes two forms, and it would be interesting to have a list collected of the species in which this remarkable imperfection has shown itself. One form is that in which opposite sides of the insect are of opposite sexes, and this gives rise to a very monstrous appearance, especially when the sexes differ in size and colour of wing, and in the pectination or filiform shape of the antennæ. The other form of hermaphroditism is when the sexual characters are intermingled so that both sides partake equally of the diverse sexual characters. The pretty *Anthocharis Euphenoides* is very subject to this latter form.

And now, in closing my subject, I will refer to a few matters worthy of attention, but which I have no time to discuss—namely, the general influences of localities. Mr. Wollaston has stated that the proximity of the sea influences the coloration of insects. The chalk formation undoubtedly produces in some insects a very pale and blanched coloration, and such aberrations I am inclined to regard as the effect of mimicry in the adoption of a protective colouring. Some, again, hold that soils strongly impregnated with minerals affect the local fauna; but all naturalists are agreed that the strongest developed variations are to be found generally in places whose creatures are cut off from intercommunication with the rest of their kind by mountains, vast forests, the sea, or other natural barrier. Isolation no doubt begets peculiarity, and in the remarkable series of Shetland insects taken by Mr. McArthur we have interesting evidence of the fact.

I shall now sum up shortly the points I have brought before you. Of the past history of species we can only reason from analogy; but on comparison of the species grouped together in one genus, the student of classification cannot but be struck with many common

points of resemblance which would suggest that they are often nearly related to one another—at least ancestrally. But such conclusions must necessarily be merely speculative. We have firmer ground to go upon, however, when we deal with the evolution of species at present in progress. We find that this order of insects of which I have been speaking is subject to many kinds of variation, some attached to one sex only, others depending on the season of emergence; some which are constant and hereditary, and others which are capricious and irregular in their appearance. Some, too, there are which I have termed generic; that is to say, that many species of the same genus show a common tendency to vary alike in some one particular, and this tendency seems to point to their derivation originally from a common stock. Whatever the exciting causes may be of deviation from the typical pattern—whether climate, soil, quantity or quality of food, we have seen that the law of heredity is of paramount influence in developing variation so produced, and in transmitting and stereotyping it, as is clearly shown by the results of close breeding, as induced sometimes in nature by isolation, as in the case of an island or an Alpine valley; or artificially, as in the instance already cited of the aberrant forms of *T. Crepuscularia* and *Biundularia*; which, moreover, have become naturally permanent varieties, if not species, I am given to understand, in a wood in the neighbourhood of Barnsley, where they have replaced the normal type. Of the remote and primary causes of variation we as yet know little with any certainty, except in the case of the presence or absence of sun-light, and heat, which, without doubt, is most potent in the development or degeneration of colour and distinctness of pattern, acting, as we have seen, inversely in the case of the nocturnal and diurnal divisions of Lepidoptera.

As to the effect of diversity of food, I have ventured to express my belief that, with certain exceptions, its effect is not directly apparent in individuals, though in common with other causes it may eventually leave its impress on a race; but that its abundance or scarcity acts powerfully on the size and vigour of the insect in every stage is undeniable.

As to those strange topographical characters, two cases of which I have brought under your notice, which a number of insects peculiar to a particular district possess in common, although belonging to different genera, I do not hazard a suggestion, unless that in some way the law of mimicry, that most inexplicable of all natural powers, has asserted itself.

I shall now close with a few practical remarks.

Nov. 1884.

Researches of the nature of those I refer to cannot be carried on without the co-operation of a multitude of workers, and it is on this account that I have ventured to suggest to you the necessity of a more systematic collection of facts relating thereto. It is a great honour to the Yorkshire Naturalists' Union that so widespread an interest in such pursuits is shown by artisans, tradesmen, professional men, and others whose occupations leave them but little time for such matters; but at the same time I am impressed by a conviction that in this country generally, very few even of those who have time and leisure, devote themselves to the scientific aspect of the question. The collections I have been allowed to inspect in England are beautifully complete in arrangement and setting; but with the exception of Mr. Bond's and a few others, rarely has anything more been attempted.

In countries which have a great diversity of climate, soil, and elevation, especially such as have lofty mountains, the opportunities and temptation to compare insects bred under different conditions and in isolated regions is of course much greater. In Switzerland, for instance, a butterfly will be found to range 1,000 or 1,500 feet higher on the south side of an Alpine range than on the north; and, again, a variable species will be traced through every possible modification of its characteristic, and present every link in the chain of its divergence, within the limits of a comparatively small district.

But though the British Isles do not offer such extreme diversities of local conditions, yet there exist quite sufficient to render the study of this branch of science both interesting and productive, and I therefore desire to urge the importance of carefully labelling each specimen, even of common insects if prone to variation, with a number or mark of reference, and of registering the date and the locality of capture, and any other particulars known regarding its life history. Of variable insects no limit ought to be put to the length of series. It is very delightful to see a cabinet with an equal number of every species, but I profess to you that my instincts rather rebel against a rigid and purposeless uniformity. I am not greedy to possess a long series of a rare insect, supposing the specimens to be identical; while on the other hand I consider any limit to be objectionable as to the number of some changeable forms. But in any case specimens without records are useless for scientific purposes. These remarks are so obvious that I must apologise for making them; but I think their necessity would be understood on seeing some Continental collections, with whole drawers given up to the history of the variations of perhaps a single species.

A NEW MARITIME FORM OF WOOD VETCH:
Vicia sylvatica L. var. condensata.

By G. C. DRUCE, F.L.S.,
Oxford.

On the shingly shore of Wigtonshire, between Port William and Monreith Bay, occurred in considerable quantity a peculiar variety of *Vicia sylvatica*. The plants first seen were barren, and at a short distance appeared to be *V. Orobus*, but closer examination showed it not to be that plant, nor was it till later on, when it was seen in flower and fruit, that its connexion with *sylvatica* was made out; so different in habit was the plant. Careful examination revealed enough structural difference to render it worthy of varietal distinction, although the shingly soil and maritime situation necessarily have been the agents in causing the changed appearance. There seems to be no notice of a maritime variety of *V. sylvatica* in our own or continental floras. In 'Topographical Botany' *V. sylvatica* is recorded for Wigtonshire, on the authority of Mr. Macnab; but I do not know whether this refers to the maritime or the sylvestral plant. The latter I did not see in the county.

The difference in habit is very striking; instead of the large, climbing, plant with thin almost pellucid leaves and lax racemes of pale flowers, this occurred in dense, prostrate masses about two feet across, with densely massed flowers and subcoriaceous leaves, rigid in outline and frequently glaucous, while the flowers, although delicately pencilled with purplish violet, were themselves suffused with a light purplish brown and smaller than the typical plant.

Beneath are contrasted the opposing characters of the type and variety.

V. sylvatica.	*V. condensata.*
Stem long, weak, climbing, or trailing.	Stem short, rather rigid, prostrate.
Leaves with 6–10 pairs of thin, rather distant, oval or broadly elliptical leaflets rounded or truncate and mucronate at apex.	Leaves with 6–7 pairs of subcoriaceous, crowded leaflets, truncate and mucronate at apex. Glabrous and frequently glaucous.
Peduncles with 5–18 flowers in a *lax* unilateral raceme.	Peduncles with 4–14 flowers in a *dense* unilateral raceme.
Pedicels as long as the calyx tube.	Pedicels slightly shorter than calyx tube.
Calyx semi-membranous.	Calyx green and firm in texture.
Calyx teeth slightly unequal triangular subulate.	Calyx teeth abruptly narrowed into unequal subulate teeth.
Peduncles 2–7 inches long.	Peduncles 2–3 inches long.

Nov. 1884.

Flowers $\frac{3}{4}$ inch long; white, veined with lilac.

Flowers $\frac{1}{2}$ inch long; whitish, suffused with purplish brown, sometimes fading into bluish grey, but never of the clear tint of type.

BOTANICAL NOTES.

Clematis Vitalba at Ledsham.—I notice that in the report of the Sherburn meeting of the Yorkshire Naturalists' Union, in the July (1884) number of the 'Naturalist,' it is stated that 'at Ledsham was found a new station for *Clematis Vitalba*.' To prevent possible future misapprehension allow me to say that I have known the station in question for seven years, and was naturally at first inclined to consider that to find Clematis there was a matter worth noting. The wise scepticism of my friend Mr. Arnold Lees kept me back, however, from reporting it, and in the end I traced that the plant was a stray one from the Rectory grounds. A splendid mass of the wild Clematis grows in front of the Rectory: when and whence introduced I do not know. (I have found the same plant similarly cultivated in a garden at Airton.) From this as parent, numberless seedlings have sprung up about the Rectory grounds—some of them approaching the roadside. It is simply one of these stragglers which has been observed and recorded in the notes of the meeting.

I may add that along a small plantation at the side of the Rectory shrubberies *Doronicum pardalianches* has been naturalised in great profusion. Many thousands of the bright yellow flowers make the wood gay in summer. Its introduction there seems to be of old date: I could not by any inquiry hear of a time when the plant was unknown.—WILLIAM WHITWELL, Skipton-in-Craven, Sept. 17th, 1884.

Flora of the English Lake District.—It is somewhat remarkable that for a region so well known and so much visited by tourists a flora has not been written long ago. About 900 species of flowering plants and vascular cryptogams occur amongst the lakes as natives, colonists, or denizens, and at least 100 more have been noticed as casual introductions. In the Lake district four out of the six zones of temperature, into which Watson divides Britain, are represented. The following table will show how the Lake flora stands as compared with that of Britain as a whole, and of the north-eastern counties:—

	Infer Agrarian.	Mid Agrarian.	Super Agrarian.	Infer Arctic.	Mid Arctic.	Super Arctic.	Total.
Britain	1,225	1,070	760	293	244	111	1,425
North Yorkshire ...	...	948	413	126	...	...	992
Northumberland & Durham	...	920	418	108	....	...	935
Lake District	...	859	301	125	28	...	893

Many of the local residents have a belief that the little inn at the top of Kirkstone Pass, to which there is a steep pull-off by the coach road from Ambleside or Bowness, is the highest inhabited house in England. This is quite a delusion, as there are many houses on the Pennine Chain from 300 to 500 feet higher (the Kirkstone Inn is a shade under 500 yards above sea-level), and there is a whole village at the head of Allendale (Coal Clough) that stands at an elevation of from 1,650 to 1,900 feet above sea-level. At the Lakes there is very little cultivation above the Mid-agrarian zone, and much less variety of surface over 1,000 feet than in the eastern counties, so that, as the foregoing table shows, the flora is materially smaller. On the mountain summits over 2,700 feet, only 28 plants are known to occur.—J. GILBERT BAKER, Kew, August 12th, 1884.

CAPTURE OF A RUDOLPHI'S RORQUAL (Balænoptera borealis) AT GOOLE.

By THOMAS BUNKER,

President of the Goole Scientific Society.

On the evening of Friday, the 5th September, a large Cetacean was noticed in the river Ouse by several persons, including the crew of a steam tug, who were alarmed by it coming to the surface under one of the paddle-boxes. Some time after high-water it was seen at the entrance of the Barge Lock, apparently endeavouring to escape from the muddy water of the river. The gates were speedily opened, the animal actually butting at them; as soon as it was inside the gates were again closed, and it was fairly trapped. A crowd soon collected, and a very exciting scene took place. As often as the poor animal rose to blow, boat-hooks and other weapons were freely used. Its struggles were fearful to witness; it sometimes raised itself almost on end, its head being ten feet out of water. When dead it was brought to the surface, and lashed to an empty compartment-boat; and the next day lifted out of water by a large crane, weighed, and measured. The weight was nearly 9¼ tons; the measurements as follows—length, 32 ft. 6 in.; greatest girth, 15 ft. 6 in.; least, 4 ft.; height at the flippers, 4 ft. 8 in.; length of flippers, 4 ft. 1 in.; length of dorsal fin, 2 ft. 4 in.; distance of dorsal fin from fork of tail, 9 ft. 3 in.; distance from tip to tip of tail, 7 ft. 2 in.; breadth of blade of tail, 2 ft. 8 in.; distance from blow-holes to end of jaw, 4 ft. 5 in.; eye, situated near the angle of the mouth, to end of jaw, 5 ft. 6 in.; exposed portion of eyeball, 3 in.

The following distinguishing marks as given by Mr. Thos. Southwell in one of his papers were present:—colour on back black, on the under parts white, the belly and throat were plaited for half the length of the animal, the flippers black, dorsal fin distinct, whale-bone short (from two or three inches at each end of the jaw to fifteen at the centre), the roof of the mouth having the appearance of a woolly lining from the numerous filaments of the baleen.

As the smell on Sunday was very offensive, the body was punctured; and on Monday the blubber, varying in thickness from 3 to 7 in., was stripped off, the flesh and offal removed, and the bones deposited in a warehouse.

Mr. T. Birks, jun., corresponded with Mr. Southwell, who expressed his opinion that the animal was a specimen of *Balænoptera borealis* Less., and at his kind suggestion an offer was made by Dr. Günther of the British Museum to send an agent to examine the bones. This gentleman visited Goole on the 18th inst., satisfied

himself that Mr. Southwell's opinion was correct, and purchased the bones and baleen for £25, which sum was handed to the committee of the Sailors' Institute.

The species appears to be somewhat rare, or at all events it has not often been satisfactorily determined. It is therefore a most interesting addition to the recorded fauna of Yorkshire; and the only other county on the east coast of England for which its occurrence has hitherto been recorded is Essex.

MAMMALIAN NOTES.

Black Rat (Mus rattus) at Newcastle.—On the 1st August last, through the kindness of Mr. John Henry Gurney of Northrepps Hall, I had the opportunity of examining a specimen of *Mus rattus* which had been sent to him from Newcastle-on-Tyne. Mr. Gurney's correspondent, who is engaged in a large engineering establishment on the Tyne, spoke of the rat sent as one of a race of rats which had established themselves in their works; from this I imagine their appearance there is of recent date. As it may interest your readers, I append some of the principal measurements of the Newcastle specimen:—Total length, $13\frac{8}{12}$ in.; head and body, $6\frac{5}{12}$ in.; tail, $7\frac{3}{12}$ in.; head only, $1\frac{9}{12}$ in.; ears, $\frac{9}{12}$ in. long; $\frac{9}{12}$ in. wide. Fur long and sooty black, the head long and pointed, the lower jaw much shorter than the upper, the ears rounded and having the appearance of being very large, the feet slender, and their soles conspicuously tuberculated. Although *M. rattus* is known to occur at Stockton, from which town I have received specimens, Messrs. Mennell and Perkins (Mam. Northumberland and Durham) do not speak of its occurrence at Newcastle, where it could hardly have escaped notice had it been present any length of time; it seems likely, therefore, that this is another instance of that strange recurrence of individuals of a species long since regarded as extinct in that locality, by which we are sometimes almost startled (as instance the recent appearance of the Wild Cat in Lincolnshire), or it may have been introduced by foreign shipping. A much more likely species to be introduced by shipping is *Mus alexandrinus*, which I think is probably sometimes mistaken for *M. rattus*; it may, however, at once be detected by its greater proportionate length of tail.—T. Southwell, Norwich, 25th September, 1884.

Albino Mole in Nidderdale.—Mr. Christopher Beck, of Brimham, has now in his possession a perfectly white specimen of the Mole (*Talpa europæa*), stuffed, which was taken at that place some time ago.—William Storey, Pateley Bridge, September 10th, 1884.

Harvest-mice in captivity.—I have had for the last three months some Harvest-mice (*Mus messorius*) in confinement, which came from the neighbourhood of Beccles. They are wonderfully active, not to say restless, in their movements, and are rarely in their sleeping compartments (of which there are three). Their great amusement is working the wheel in the centre of their cage, and it is almost perpetually in motion; they appear, however, to have a habit of retiring to their sleeping quarters from about noon until three p.m. each day. I find they eat canary and millet seed readily, the latter they seem decidedly to prefer; they are very fond of a piece of watercress, and thoroughly enjoy grubbing about in a tuft of grass. They are also fond of bread and milk. When I first had them their colour was of a brownish red, but it has gradually increased in orange tint, and is now of a bright orange or fawn colour, the underside being pure white. As mentioned by Mr. G. T. Rope (*Zoologist*, viii. 59), the likeness to *Mus Decumanus* on a small scale is very striking; the ears, unlike those of *Mus Musculus*, are small, and lie close to the head, scarcely projecting beyond the fur.—George W. Oldfield, London, July 14th, 1884.

Naturalist,

A WINTER VISIT TO THE FARNE ISLANDS.

By the Rev. H. H. SLATER, M.A., F.Z.S.,
Irchester, Wellingborough; Member of the British Ornithologists' Union.

Some few years ago I was in the habit of paying one or more visits of a few days to Bamborough every winter, and the following is a record of a day's experiences on one of these occasions. Four of us —of whom the others shall be hereinafter designated as E., W., and M.—left Mrs. Henry's comfortable little inn at Bamborough (Mrs. Henry has now, alas! 'gone over to the majority') at the extremely inconvenient hour of 3 a.m., for North Sunderland, where we intended to take boat for the Islands. Though we had sent word the day before of our intentions, we found the whole village asleep on our arrival, but as we had come this time an hour before we wanted to start, having had a similar experience on a previous occasion, we managed to get off in good time to be concealed safely on the Meg-Stone before dawn.

The Meg-Stone, as all who have visited the Farnes will remember, is the smallest of the islands and the nearest in shore, and, being almost invisible at high tide, is the one where the old phrase, 'exitium est avidis' (or, let us say, 'infaustis') 'mare nautis,' is oftenest and most fatally exemplified.

No incidents occurred on our outward voyage, except that a string of wild geese passed, 'hawnking' loudly, over our heads, and that one of the party, a black spaniel, showed unmistakable symptoms of 'mal-de-mer.'

As soon as certain light streaks in the east heralded the advent of the rosy-fingered Aurora, as Virgil or some other penny-a-liner might say, we were aware of the voices of passing ducks, and other birds, who had been feeding during the night on shore, and, hidden in our clefts of rock, we waited for events to develope. The boat was lying concealed in a little creek, so as to be ready to pick up any dead birds which might fall in the sea, an excellent purpose which events unfortunately frustrated. Cormorants and other birds began to pass over us, and I heard several shots fired, and at last saw three ducks coming straight to me, nice and low down, of whom two fell in the sea about thirty yards from me. Next to appear was an adult drake Eider, whom I wanted, and who collapsed almost upon the two other dead ducks. It was now almost daylight, and as there seemed to be a lull in the proceedings, I thought I might as well get the boat to gather my three victims, whom I had been contemplating with satisfaction. To my annoyance, I caught sight of it some distance away, with M. in the bows, firing vigorously from his 'bow chaser.' So I could only go to cover again, and watch my three

ducks float off with the tide. Shortly, another duck came straight over my head, at whom I fired both barrels, but without effect, owing, perhaps, to my state of indignation against M.; I tried to think so. Yet another, who falls close to the water's edge. The young spaniel, who had never seen the sea before, and could not understand why water should rise up in waves, apparently without reason, and hit him in the face, declined, though a good retriever on land, to bring the duck, so watching an opportunity I made a rush between two waves, and thanks to a pair of fishing waders, retrieved without wetting, a female or young male Eider. Nothing further occurring, I joined E. and W., who had also lost birds through the absence of the boat, and we made signals of distress. After a while, back came M. in the boat, leisurely, benignly smiling the smile of victory, and displayed an old Cormorant, which he had wounded and after a long chase, and a liberal expenditure of ammunition, secured. He seemed surprised at our want of enthusiasm, as we addressed him, more in sorrow than anger, and we went to look for our dead, but without success, as they had had nearly an hour's start on a fast tide.

We then went on our way to visit the other islands, securing as we went a young Gannet in the black and white spotted plumage, for a specimen. A course of recriminations, however, seemed in some degree to have 'put out,' metaphorically speaking, the 'eye' of the party, and two Golden-eyes (one an adult drake), and a couple of Wild Ducks, which we flushed on the islands, and which ought to have been added to the bag, escaped scatheless. A few good specimens of Purple Sandpipers in winter plumage and a Turnstone were collected, and Dunlin and Redshanks seen, and M., a young but ardent sportsman, was with difficulty restrained from slaying more Cormorants and various Gulls. For we made it a rule to take no life, except for food, or for a needed specimen, and might have made an exception to the latter in the case of a rare accidental visitor. Would that all who visit these islands would show a little humanity now and then! For who has not heard of the steamer-loads of so-called sportsmen who leave the Tyne every autumn for the Farnes, and who destroy, with a platoon fire, every unfortunate bird that comes within range, without so much as taking the trouble to pick up the fallen, or even to put the wounded out of their misery? However, an association has been formed to put an end to this barbarity, to which we will wish all success.

Washing out my mouth (metaphorically, again), after this unsavoury digression, I will only add that we visited all the islands, without seeing anything but Gannets, Guillemots, &c., so we turned to come back to North Sunderland. Passing the Inner Farne we saw at a

distance a number of birds diving and swimming after the manner of Grebes; so we approached. Several shots were fired at one of them, but without success, as it dived whenever we got within sixty yards, as well as every time we fired, and the motion of our boat caused the shot to go anywhere, occasionally, but where we meant to send it. But by the free use of wire cartridges, and sticking to the same individual, one was at length secured. Hurrah! A young Red-necked Grebe. Thinking there might be an adult in the party, we picked out the whitest looking survivor, and gave chase, and after a variety of futile shots, fired as soon as the bird came to the surface—and affording a considerable amount of excitement, as no one could tell in what direction the bird would appear next—a shot took effect in the head, and an adult Red-necked Grebe was brought on board, still retaining a good deal of the chestnut colour of the summer plumage on the neck. We left the remainder of the party to their enjoyment, and reached North Sunderland without further adventure.

We then tramped back to Bamborough, with the appetites usually begotten of such expeditions, and the old 'skart,' shortly to be made into a skeleton, was unanimously, except so far as he was concerned, ceded to M. to carry. How Mrs. Henry managed to board us at the price she did, was always a mystery to me!

ORNITHOLOGICAL NOTES.

Breeding of the Hawfinch in North Yorkshire.—On the 22nd of May last, my brother found here a nest of the Hawfinch (*Coccothraustes vulgaris*). It was built about seven feet from the ground, in a hawthorn bush, by the river-side. The foundation was of twigs, and the lining of roots; but the whole fabric was so loosely put together that, as we stood beneath it, we could see the eggs, which were five in number, through the nest. The hen bird was sitting on the eggs when the nest was found, and was very unwilling to leave it. When she came off, she was joined by the male bird, and both flew round for some time, seeming much agitated, the boldly marked plumage of the latter showing to great advantage in the bright sunlight. In the same bush, and only about three feet from this nest, was another similarly constructed, and from which a young brood had evidently been fledged last year. Doubtless it was the family from this nest which helped themselves so freely to our green peas in July, 1883. So many pods were robbed of their contents, that we threw nets over the rows, and the following day found a young male Hawfinch entangled in the meshes, after which the birds paid us no more visits. Some years since an adult male Hawfinch was captured in a similar manner in the kitchen garden at Swinton Park.—THOMAS CARTER, Burton House, Masham, September 2nd, 1884.

Occurrence of the Barred Warbler (Sylvia Nisoria) on the Coast of Holderness.—On the 28th of August, I obtained a young female of this bird, the first specimen recorded from Yorkshire, and only the second from Great Britain. I took it, when alive, for an exceptionally brilliant Garden Warbler. It is in a very interesting state of plumage and considerably more adult than the very young bird figured in Dresser's 'Birds of Europe' (plate 68). The wings and tail are exactly those of an adult female, the back is plain light grey, the feathers of the rump and upper tail-coverts only being tipped with white, the under parts are of a greyish white, but in certain lights faint traces of dark bars are visible on the flanks; the under tail-coverts are as in adults, darkish grey with white margins. The bill is very strong and heavy for *S. Nisoria*.—HENRY H. SLATER, Irchester, Oct. 20th, 1884.

THE YORKSHIRE NATURALISTS' UNION AT SPURN POINT.

The closing excursion of the present year, held on Wednesday the 3rd of September, devoted to the examination of the Yorkshire Land's End, was a very successful one. The weather was all that could be desired, fine, bright, and sunny, and the sea remarkably smooth and favourable for landing. About seventy members and friends were present, representative of sixteen societies, viz.:—Dewsbury, Driffield, York, Goole, Leeds (3), Selby, Hull, Scarborough, Liversedge, Barnsley, Sheffield, and Bradford (3). The excursion was made by steamer from Grimsby; Spurn was reached at about noon, and the excursionists had about three hours on shore. Tea was served on board the steamer during the return journey, and the usual formal meetings were not held, as time did not permit of it. The officers or representative members, however, busied themselves in collecting information concerning the day's investigations, and this amply compensated for the want of formality. The following are the chief results as so collected:—

Mr. John Cordeaux, M.B.O.U., the president of the Vertebrate Section, who had collected the observations made upon that class of animals, stated that of the mammalia had been noticed 2, the Common Shrew (*Sorex vulgaris*), and the Hedgehog (*Erinaceus Europæus*), of which one dead and another alive were seen near the Point by Rev. H. H. Slater. The birds seen during the day were the Wheatear, Willow-Wren, Sedge-Warbler, Nightjar or Fern-Owl, Curlew, Whimbrel, Sanderling, Turnstone, Knot, Great Black-backed Gull, Lesser Black-backed Gull, Herring Gull, Black-headed Gull, Kittiwake, Common Gull, Arctic Tern, Common Tern, Lesser Tern, and Cormorant—19 species. The only reptile seen was the Lizard (*Zootoca vivipara*), which is so abundant upon the sand-hills, and which is often mistaken for the true Sand Lizard. The Rev. H. H. Slater, M.A., F.Z.S., who had been staying for the previous fortnight in the district, stated that he observed among other species the following:—Rose-coloured Pastor, Wood-Sandpiper, Greenshank, Grey Plover, Knot, Sanderling, and Dunlin—the last-named four in summer plumage.

The Rev. W. C. Hey, M.A., of York, president of the Conchological Section, states that the sand-hills produced *Helix aspersa* and *H. nemoralis*. Heaps of fragments of the latter occurred near stones, against which they had been broken by birds. *Helix virgata* (erroneously stated as being most abundant in the circular of the meeting), was not observed, but *H. caperata* swarmed under stones, together with its pretty variety *ornata*. *Pupa marginata* was found in some numbers at the roots of grass, and *Vitrina pellucida* in damp places, as also was *Zua lubrica*. Mr. R. D. Darbishire, B.A., F.G.S., of Manchester, found a single specimen of *Vertigo edentula*. Of marine shells, Mr. Hey noticed *Hydrobia ulvæ* on the mud-flats of the estuary, and *Littorina littorea* and *Chiton marginatus* on stones between tide-marks. *Tellina solidula*, *Purpura lapillus*, *Buccinum undatum*, and *Trophon truncatus* were observed on the beach.

The observations in Entomology were made by Messrs. J. H. Rowntree of Scarborough, George Rose of Barnsley, R. W. Rusby of Leeds, Edward Howgate, junr. of Dewsbury, and other members. The first-named of these gentlemen, who acted as reporter in the absence of the officers of the Section, stated that in lepidoptera were observed *Vanessa Atalanta*, *V. urticæ*, *V. cardui*, *Lycæna Alexis*, *Agrotis tritici*, *Plusia Gamma*, *Pterophorus pterodactylus* and *Stenopteryx hybridalis*, the latter of which is a not uncommon coast species. The larvæ of *Agrotis riparia* were plentiful, feeding on the Saltwort (*Salsola Kali*), and those of *Pieris brassicæ* and *Macroglossa stellatarum* were also taken.

Of other orders of insects, Mr. C. F. George, of Kirton Lindsey, took some beetles, which were afterwards named as *Broscus Cephalotes* and *Ægialia arenaria*, and a sand-wasp in some abundance, determined by Mr. E. Saunders as *Pompilus plumbeus*. Mr. George also found under a stone several specimens of a mite (*Bdella hexophthalma*) which does not appear to have been hitherto recorded as British. There is a good figure of it in Walckenaer's 'Aptères.'

Marine and littoral forms of life were investigated by various members. Mr. W. Barwell Turner, F.C.S., F.R.M.S., of Leeds stated that of sea-weeds none were found rooted, all washed ashore; those gathered included *Delessaria sanguinea*,

D. alata, *Ceramium rubrum*, *C. echinatum*, *Ulva latissima*, *U. linya*, *Fucus vesiculosus*, *F. serratus*, *F. ceranoides*, *Griffithsia setacea*, *Chrysimenia clavellosa*, *Laminaria digitata*, *L. saccharina*, *Cladophora rupestris*, and many others as yet undetermined. Of marine Polyzoa were noticed *Tubulipora patina*, *Diastopora obelia*, *Crisia aculeata*, *Crisidia cornuta*, *Gemellaria loricata*, *Flustra foliacea*, *F. chartacea*, *Carbasea papyrea*, *Membranipora pilosa*, *M. membranacea*, *Cellipora pumicosa*, *Amathia lendigera* and many others not yet worked out. Of hydroid zoophytes there were *Campanularia serpens* (?), *Plumularia falcata*, *P. cristata*, *Antennaria antennina*, *Sertularia abietina*, *S. filicina*, *S. operculata*, and *Halecium halecinum*, while of sponges were observed *Grantia pulverulenta*, *Spongia limbata*, *Halichondria ramosa*, and *H. panicea*. Mr. Turner remarks, in sending these notes, that Spurn requires a week's hard work.

Mr. P. F. Lee, of Dewsbury, Phanerogamic Secretary for the Botanical Section, reports, that considering the limited time (about three hours) spent at the Point, and also taking into account the very small area worked, a fairly good proportion of the sea-side flora was observed. On the shingle of the river's beach, the Sea Rocket (*Cakile maritima*) and the Saltwort (*Salsola Kali*) were growing in abundance. The sandy dunes between this and the ocean, all mantled, and at the same time kept intact by the maritime form of the tall Fescue-grass (*Festuca arundinacea*), the Mat-grass (*Psamma arenaria*), the Lyme grass (*Elymus arenarius*), and the Sea-sedge (*Carex arenaria*), though much trodden down by the weekly tide of excursionists from Grimsby, yielded us other good plants, viz :—the Sea-Holly (*Eryngium maritimum*), a young specimen of Sweet Briar delightfully scented (*Rosa rubiginosa*), Musky Stork's-bill (*Erodium moschatum*), Sea Wormwood (*Artemisia maritima*), Spiny Rest-harrow (*Ononis spinosa*), and the rare Sea Buckthorn, a shining silvery willow-like shrub (*Hippophaë rhamnoides*), in fine fruit, and well able to hold its own with its strong array of prickles, against the wanton destroyer. The Rev. H. H. Slater as guide, anxious too for the botanists to see a patch of Dodder he had discovered a day or two before, was leading them on to the charmed ground, when lo ! one of the Dewsbury lady-botanists startled us by shouting out ' Dodder '—there, sure enough, was another great patch of that fascinating but deadly parasite. It proved to be the var. *Cuscuta trifolii*, a form of *C. Epithymum*, which, according to Sir J. D. Hooker, does not seem entitled even to sub-specific rank, being so similar to the type, and parasitic on other plants as well as those of the Clover family. This one was on *Lotus corniculatus*, and creeping over *Galium verum*. Nearer the sea-coast were gathered specimens of the Jointed Glass-wort (*Salicornia herbacea*), Sea Star-wort (*Aster Tripolium*), Sea-blite (*Suæda maritima*), the Sea Milk-wort (*Glaux maritima*), while on other parts of the sand-hills were the Yellow-wort (*Chlora perfoliata*), the Red Goose-foot (*Chenopodium rubrum*), the sea-side Bindweed (*Convolvulus Soldanella*), and the Oraches—*Atriplex patula*, sub-sp. *Babingtonii*, and *A. laciniata*.

The members of the Geological Section present were not very numerous but made up for this by dint of hard work in the time at their disposal. Specimens of encrinital limestone, some gneiss, black Scandinavian flints, liassic fossils, silurian schist, corals, a fragment of what was judged to be old red conglomerate, granite, trap, &c. were picked up on the shingle by Mr. S. A. Adamson, F.G.S., of Leeds, and his companions—and submitted to the Rev. E. Maule Cole, M.A., one of the secretaries of the Section.—W.D.R.

Pasiphæa Sivado.—While dredging at the mouth of the Dee this summer, we took two fine specimens of *Pasiphæa Sivado*, which are now in our Natural Science Society's Museum. As far as we know this crustacean has not been taken before on the North Wales or Cheshire Coasts. Bell, in his 'Stalked-eyed Crustacea,' speaks of it as rare in the British seas, but as the book is rather old, I should be glad to hear whether any readers of the *Naturalist* have met with it in their dredging expeditions. It at once attracts attention in the dredge by its beautiful transparent appearance, which becomes of an opaque white when placed in spirits, and it is otherwise easily distinguished from Shrimps and Prawns from the fact that the first two pairs of legs are of the same length and thickness.—C. F. Fish, Chester, Oct. 21st, 1884.

BOOK NOTICES.

'Synopsis of the Bacteria and Yeast Fungi.'—By W. B. Grove, B.A. (London: 1884, Chatto and Windus.)

Professor Cohn's group Schizophytæ includes Phycochromaceæ and Schizomycetes; to this union the author dissents on the ground of important physiological differences, the most noteworthy of which depends on the presence of chlorophyll in the former, while in the latter it is entirely wanting. Morphologically the two groups closely agree—so much so that, to prove the preconceived idea of their distinctness, a physiological character, the result of the diverse conditions under which they exist, is acknowledged as the crucial test. In Phanerogams achlorophyllose plants abound, but morphological agreement with chlorophyllose forms is considered sufficient to justify both being included in the same family, as in the Scrophulariaceæ. Is this a mistake, or is it consistent with science to accept both views? Professor Wright, in a paper on a new species of Parasitic Green Alga (Trans. Royal Irish Acad., vol. xxv., pt. viii., 1878), describing a new parasitic green alga—*Chlorochytrium Cohnii*—states that it usually contains bright green chlorophyll, and is thus enabled to support itself by the deoxidation of carbonic dioxide; but sometimes transitional forms occur, leading up to individuals entirely destitute of chlorophyll. These latter, according to accepted ideas, require organic food, and are, both from a morphological and physiological view, true fungi. Dr. Wright accounts for the parasitism of the green alga, which is met with in the thallus of various species of *Schizonema*, by supposing it to be descended from a fungus, which, owing to the differentiation of a portion of its protoplasm into chlorophyll, is rendered independent of organic food, still retaining the original habitat, the colourless form being a retrogression to the primitive type. Without for a moment insisting that, because this transmutation has been observed in a single plant, it necessarily follows that it must be universal; yet we believe that it does not tend to strengthen the value of chlorophyll as a distinction between Fungi and Algæ. The definition of a species, even among the higher forms of life, is no easy matter, yet the student of a special group must, we presume, have—at least for the time being—a more or less settled idea on that subject, to enable him to proceed with systematic and morphological investigations. What Mr. Grove's idea is on this point we have failed to discover. On page 4, after stating his opinion that the number of species is far smaller than Cohn's classification would lead one to judge, says, 'For many of these species are very probably only forms which have been differentiated by the influence of various external agencies, and have become more or less constant.' On page 78, after stating Nägeli's assertion that there were no real species among the Schizomycetes, we read:—'Much of the disputation on this topic of "species" arises from the fact that many persons cannot readily conceive a species in the new light which the Darwinian theory has thrown upon it. There can be no doubt that new species not only may, but actually must, be making at the present moment.' And, finally, to illustrate the rapid progress made by the author on the subject of the evolution of species since writing page 4, on page 79 he states:—'It follows that we must consider as a species any form or group of forms which, under present conditions, can be clearly distinguished from all other forms, even though we may know that, if the environment were changed, the species would change too.' The systematic part of the book is excellent, and the illustrations numerous. A second edition, which in the case of a book so indispensable to mycologists, brewers, and microscopists generally, must soon be called for, will enable the author to incorporate the important researches of Koch on the Cholera Bacillus, and of Zukal on the genetic connexion between Bacteria and Algæ. Students would be pleased to see Appendix B supplemented, considering the importance of staining in the detection and discrimination of species.—G.M.

The Honey-bee: its nature, homes, and products.'—By W. H. Harris, B.A., B.Sc. (The Religious Tract Society; no date.)

This book contains a comprehensive and lucid account of its subject, written in an interesting style, and accompanied by numerous woodcut illustrations. No aspect of the subject, whether historical, scientific, or practical, appears to have

been neglected by the author. The principal defects of the book are that it has no index (a table of contents doing duty as a substitute), and that it bears no date. The last defect—though often characteristic of the Religious Tract Society's publications—is a serious one, especially in a book dealing with a scientific subject.

We can most heartily commend Messrs. W. Swan Sonnenschein & Co.'s penny series of Young Collector's Handbooks, which are admirably got up for the price, and embellished with good engravings. The literary contents are sound and practical, as indeed would be naturally expected of such writers as R. Bowdler Sharpe, W. F. Kirby, B. B. Woodward, James Britten, Barclay V. Head, and their coadjutors.

From Messrs. W. Swan Sonnenschein & Co. we have received various other books for notice. One by S. R. Bottone on 'The Dynamo: how made and how used, a book for amateurs,' is so far beyond the scope of a natural history journal that we confess our inability to say much of it beyond that it is plentifully illustrated with woodcuts, and apparently written in a direct and practical manner.

The Rev. Henry Wood's 'A Season among the Wild Flowers' is a pleasantly written and gossippy series of papers which aim at giving, in a conversational style, simple but accurate information respecting the principal natural orders and genera of British plants. It is well got up, and includes numerous woodcuts.

'Flowers: a Fantasy,' by Cornelia Wallace (Sonnenschein & Co., 1884), which is dedicated 'to sister woman,' includes little cuts of various flowers and compares them to divers types of female character.

NOTES AND NEWS.

In the Midland Naturalist for this year, Mr. W. B. Grove, B.A., gives a series of important papers on the Pilobolidæ, embodying a synopsis of the European species, and giving a description of a new one.

In the *Entomologists' Monthly Magazine* for August, the Rev. W. W. Fowler, M.A., F.L.S., has begun a series of valuable notes on 'The Nitidulidæ of Great Britain,' which will be of great use to coleopterists. It is a critical revision of the family, and includes brief definitions of the various genera and species which it includes, together with useful analytical keys.

In the *Entomologist* is still continued the valuable series of papers by Messrs. John B. Bridgman and Edward A. Fitch, F.L.S., to which they give the unassuming title of 'Introductory Papers on Ichneumonidæ.' Herein the genera and species are discriminated by the ready method which an analytical key affords, and much information upon the subject of parasitism conveyed by means of a series of tables of 'hosts,' and of the parasites which prey upon them.

The close time for wild birds in the county of Northumberland has recently been varied by order of the Home Secretary, so as to be from the 1st day of March to the 11th of August in each year.

The 24th Annual Report of the Liverpool Naturalists' Field Club, for 1883-4, has reached us, whereby it appears to keep up its work in Botany with accustomed vigour. It seems, however, a pity that in so strong a Society equal attention should not be paid to other branches of science, at all events to Geology and the various branches of Zoology. In the report now before us the 'Botanical Résumé,' by Mr. Robert Brown and Mr. John Vicars, is, as in former years, of considerable interest. A large number of plants have been observed, as might reasonably be expected from the wide range of country traversed in the excursions, which in 1883 were in Lancashire, Cheshire, Derbyshire, and Westmoreland.

The annual meeting of the Manchester Geological Society was held on the 7th October, when Mr. G. C. Greenwell, F.G.S., was elected president, Mr. H. M. Ormerod, F.G.S., treasurer, and Messrs. Joseph S. Martin, F.G.S., and Mark Stirrup, secretaries. The vice-presidents are Messrs. W. S. Barrett, Henry Hall, Clegg Livesey, Mark Stirrup, F.G.S., and H. A. Woodward, and the council-list is complete with the names of Messrs. W. Bryham, J.P., R. T. Burnett, F.G.S., Theodore Grimké, James Tonge, F.G.S., James Radcliffe, W. Watts, F.G.S., G. C. Greenwell, jun., F.G.S., Chas. Hardwick, John L. Hedley, G. H. Hollingworth, F.G.S., Geo. Peace, and Geo. Wild. The annual report stated that the work done had maintained the high standard of previous years, and that the membership continued to increase, notwithstanding a heavy death-roll which included some of the most valued of the members, while the library had increased to such an extent as to call urgently for a new catalogue. It was also mentioned that Mr. Kendall's paper on the Mineral Veins of the English Lake District had raised questions of no small importance.

The new 'Flora of the English Lake District,' by Mr. J. G. Baker, F.R.S., is being printed, and will be ready for publication some time during the autumn. The book is to be a flora only, in a cheap and portable form, the geology and climatology of the district having been fully dealt with already in other publications. On another page, we print an interesting note on the subject from Mr. Baker.

RAINFALL FOR SEPTEMBER 1884.

STATION & OBSERVER.	Height of Rain-Gauge above Sea-level.	Total Rainfall for Month.	No. of Days on which Rain fell.	Total Fall to Date.				Heaviest Single Day's Fall.	
				In 1884.	Average of Past Years.	No. of Years.	Years of Average.	Amount.	Date.
	Feet.	Inches	Days	Inches.	Inches.	No.	Years.	Inches	
Derringham, Hull.—Wm. Lawton	10	0·95	11	13·63	16·57	34	1850-83	0·26	6th.
Goole.—John Harrison...	25	1·53	9	14·73	19·50	9	1875-83	0·41	21st.
Scarborough.—Allan Rowntree	130	1·30	15	15·04	19·94	18	1868-83	0·40	21st.
Baldersby, Thirsk.—W. Gregson	100	1·38	11	20·76	—	—	—	0·37	6th.
Masham.—Thos. Carter..	269	1·39	14	22·47	—	—	—	0·56	6th.
Shadwell, Leeds.—Geo. Paul	500	2·10	11	19·90	—	—	—	0·75	21st.
Leeds.—The Museum ...	183	1·38	17	18·04	18·07	30	{1853-62 / 1865-84}	0·50	21st.
Horsforth.—James Fox	350	1·86	13	19·79	23·43	15	1870-84	0·58	21st.
Barnsley.—Dr. Sadler...	350	1·06	10	15·86	—	2	1882-83	0·26	6-8th.
Wentworth Castle.—Wm. Fisher	520	0·99	11	18·31	24·42	8	1882-83	0·30	6th.
Ingbirchworth.—Mr. Taylor	853	1·78	13	25·39	—	2	1882-83	0·42	6th.
Dalton, Huddersfld.—J. W. Robson	350	2·19	14	19·45	23·86	18	1866-83	0·63	21st.
Thorpe, Halifax.—F. G. S. Rawson	365	2·64	18	26·44	—	2	1882-83	0·55	6th.
Tuxford, Notts.—Grammar School, J. N. Dufty.	220	1·31	11	15·37	22·80	8	1876-83	0·52	21st.

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Information is at present specially required on the Slugs (*Testacella*, *Limax*, and *Arion*), of which living specimens from every district are desired.

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AND

WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

Contents:

PAGE

Micro-Palæontology of the Northern Carboniferous Shales—*G. R. Vine:* 97
(III. The Ostracoda, Monticulipora, and Miscellaneous Forms: Redesdale Shales, Northumberland.)
Ornithological Notes from Upper Coquetdale—*John Cordeaux, M.B.O.U.*... 105
Description of a species of Andreæa new to Science:— 113
(A. commutata).—*Gustav Limpricht.*
Hymenoptera near York in 1882 and 1883—*Thomas Wilson* 115
Orinthological Notes:— 110, 111
Tengmalm's Owl on the Yorkshire Coast—*P. W. Lawton*; Dotterel at Easington—*Id.*; The Food of Sparrows—*J. H. Gurney, junr., F.Z.S.*; Do Insect-eating Birds cast Pellets—*W. Barber*; Great Tit attacking Stuffed Birds—*Herbert Goss, F.L.S.*; Destruction of Bird-life at the Farne Islands—*Rev. H. E. Fox, M.A., M.B.O.U.*
Conchological Notes:— 112
Large Anodons in Notts.—*C. T. Musson*; Unio pictorum at Ossington, Notts.—*W. Gain*; Land aud freshwater Shells of County Durham—*Baker Hudson, M.C.S.*; Bulimus acutus, a query.
Notes on Lepidoptera:— 104
Satyrus tithonus in Lincolnshire—*J. W. Carter*; Hepialus humuli—*G. T. Porritt, F.L.S.*; Argotis ripæ at Spurn—*Eds.*; Melanippe unangulata new to Yorkshire—*W. E. Brady*; Stenopteryx hybridalis and Argyresthia retinella at Huddersfield—*G. T. Porritt, F.L.S.*; Phoxopteryx diminutana new to Yorkshire—*Id.*; Coleophora fusco-cuprella, a correction—*Id.*
Note on Coleoptera:— 103
Astynomus ædilis at Hull—*N. F. Dobrée.*
Note on Arachnida:— 103
Pseudo-scorpions new to Britain—*Rev. O. Pickard Cambridge, M.A.*
Cryptogamic Notes:— 114
Manchester Cryptogamic Society; Barbula princeps in Yorkshire, a query—*J. C.*
Book Notices:— 117
(The 'Entomologist' Synonymic List of British Lepidoptera, &c.)
Notes and News 119
Rainfall 120

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BOOKS RECEIVED.

Illustrated Science Monthly, Oct., Nov., 1884. [Bogue.
Smithsonian Institution Report, 1882. [Institution.
Revue Bryologique, 1884, No. 5. [Editor.
Mineralogical Magazine, July, 1884. [Min. Soc.
Naturalists' World, Sep., Oct., and Nov., 1884. [Editor.
Midland Naturalist, Oct. and Nov., 1884. [Editor.
Proceedings of Philadelphia Academy of Natural Sci. 1884. pt. 1. [Academy.
Report of Nottingham Medical Officer of Health for 1882 (contains Geological Map of Nottingham town). [Author.
C. Bailey on Naias graminea in Lancashire. [Author.
The Mountain of the Winds.—Charles Bailey. [Author.
Weeds, an address.—Charles Bailey. [Author.
Beiträge zur Phänologie.—Drs. Ihne and Hoffmann, Giessen 1884, pp. 178. [Author.
Angler's Note-book and Naturalist's Record, No. III., August 1884. [Publisher.
Notes on the Flora of Matlock.—J. G. Baker and W. W. Newbould. [Authors.
Notes from my Aquarium, I.-VI.—George Brook, ter., F.L.S., pp. 15. [Author.
Barnsley Nat. Soc. Quart. Trans., Vol. 4, part 1. [Society.
Psyche, a journal of Entomology, Aug., Sep., 1884. [Editors.
Norfolk and Norwich Nat. Soc. Trans., Vol. III. parts iv, v. [Society.
Essex Field Club, Trans., April 1884, Vol. III. part viii. [Society.
Proceedings of Berwickshire Nat. Club, Vol. X. No. 2, 1884. [The Club.
Journal of Conchology, Oct. 1884. [Editor.
Revision of Genus Entomobrya.—Geo. Brook, 14 pp. and 2 plates. [Author.
Rate of Development of Common Shore-Crab.—Geo. Brook, 6 pp. & plate [Author.
New Genus of Collembola (Sinella), allied to Degeeria.—Geo. Brook, 5 pp. [Author.
Notes on some little known Collembola, &c.—Geo. Brook. 7 pp. & plate. [Author.

EXCHANGES.

Notices of Exchange inserted free of charge to Subscribers.

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Books.—'History and Antiquities of Thorne and Hatfield Chase,' 1829; Radford's 'Walks and Drives from Ben Rhydding,' 1881; J. Pye Smith's 'Scripture and Geology,' 1840 (contains Prof. Phillips' armorial book-plate and the hand writing of the author); Plan of Leeds, mounted, 1822; for Natural History Books or cash.—Geo. Roberts, Lofthouse, Wakefield.

MICRO-PALÆONTOLOGY OF THE NORTHERN CARBONIFEROUS SHALES.

By GEORGE R. VINE,
Attercliffe, Sheffield; *Secretary of the British Association Committee on Fossil Polyzoa.*

III.—THE OSTRACODA, MONTICULIPORA, AND MISCELLANEOUS FORMS: REDESDALE SHALES, NORTHUMBERLAND.

It appears to me to be far wiser to give as complete a list as possible of the several micro-organisms found in these Northern Shales, rather than to delay their publication till some future date. I do this for two reasons: 1st, the Entomostraca, though not being my speciality, have had a large share of my attention, but chiefly the Palæozoic and recent brackish-water species; in the 2nd place, I have found that in every Carboniferous Limestone Shale bed that I have examined for Polyzoa, there has always been a peculiar association of fossils, Brachiopoda, Polyzoa, certain forms of Entomostraca, and Foraminifera. This association appears to me to be indicative, to some extent, of ocean depths, and although we may not have as yet a complete knowledge of oceanic depths in the past ages of the world's history, yet every help that can be given ought to be given in the interest of future as well as present science.

In the chapter devoted to 'Materials for a Palæontology of Northumberland,' Professor G. A. Lebour (pp. 58-72, in his Outlines of the Geology of Northumberland, 1878) gives a list (pp. 66-68) of Fossils from the Ridsdale ironstone beds of Northumberland, and in it he mentions, besides an encrusting Coral, four species of Polyzoa? *Hemitrypa hibernica* and *Polypora papillata* M'Coy; *Fenestella plebeia*, and *F.* sp. and *Ceriopora* sp.; but no mention is made of Entomostraca or Foraminifera. Of the latter, however, a separate list is furnished (p. 70) after Mr. H. B. Brady. In the recent issue (Vol. 10, No. 2) of the Proceedings of the Berwickshire Naturalists' Club, Professor T. Rupert Jones furnished a paper on 'Lower Carboniferous Entomostraca,' pp. 313-325, in which he describes several new species, together with notes on the specimens in the collection of the late Mr. George Tate. In this paper Professor Jones refers to a former one published in the 'Transactions', 1864, pp. 83-89. Some of the species described in Professor Jones' recent paper belong to the Tuedian and Bernician beds, and, as many interesting details are referred to in the paper, it may be well to give the list as a preface to what will follow.

OSTRACODA.

TUEDIAN SPECIES—various localities.

Macrocypris? Kirkbyana Jones. No. 3 of Notes.

Leperditia Scotoburdigalensis Hibbert. No. 5 of Notes. This species ranges in the lower and middle mountain limestone group.

MOUNTAIN LIMESTONE species:

Candona? Tateana Jones.	No. 1 of Notes—	Lower part.
Bernix Tatei Jones.	„ 2 „	Mid. „
Carbonia fabulina Jones.	„ 4 „	M. L. group.
Cytherella Tatei Jones.	„ 9 „	Lowest & mid. pt. of M. L.
Leperditia subrecta Portlock.	„ 6 „	M. L. low down.
Beyrichia crinita Jones and Kirkby.	„ 7 „	„ „
Kirkbya spiralis Jones and Kirkby.	„ 8 „	„ lower pt.

PHYLLOPODA.

Estheria striata Munst. var.		
„ var. **Tateana** Jones	No. 10 of Notes—	M. L. lower pt.
„ **tenella** Jordon	„ 11 „	M. L. low down.

In addition to the above, Prof. Jones describes another species: **Darwinella? Berniciana** Jones, a 'little Cytheroid which occurs in great numbers, and in good preservation (valves united), with the *Bernix Tatei* Jones, found by Prof. Lebour' (op. cit., pp. 319, 325).

In 1879 Prof. T. Rupert Jones and J. W. Kirkby published their joint paper on 'Species of the Ostracodous Genus **Bairdia** M'Coy' (Quart. Jour. Geol. Soc., November), and in it the authors name many localities for Carboniferous species; and as this paper is well illustrated, the student will do well to study this peculiar group with the assistance afforded by it.

My own paper on the Yorkshire Carb. Entomostraca (Geol. and Polytec. Soc. Trans., 1884, pp. 226-238), may be referred to for special details, and for comparing the Northumberland with the Yorkshire species.

Fam. I. *CYPRIDÆ*.

1 **Bairdia Hisingeri** Munster.

J. and K., Quart. Jour. Geol. Soc., Nov. 1879, pl. xxix., fig. 4-10, and pl. xxx., fig. 12.

See also Ann. Mag. Nat. Hist., J. and K., 1865.

Carb. Entomos. Yorks., Vine (op. cit., p. 232).

This species varies very much in the Redesdale Shales, and some of the specimens are fine and plump.

2 **Bairdia Hisingeri** Munster, **elongate** var., Jones and Kirkby (op. cit.) pl. xxx., fig. 12.

Some of the specimens of this variety are finer, and of greater length than many of the elongate forms from other localities in British Carb. rocks; but, like B. Hisingeri, specimens vary much.

3 **Bairdia plebeia** Reuss.

Jones and Kirkby: Quart. Jour. Geo. Soc., Nov. 1879, p. 569, pl. xxviii., figs. 9-19.

Vine: Carb. Entomos. Yorks. (op. cit., p. 233).

4 **Bairdia brevis** Jones and Kirkby.

Jones and Kirby: Quart. Jour. Geo. Soc., Nov. 1879, p. 575, pl. xxxi., figs. 1 and 8.

Vine: Carb. Entomos. Yorks. (loc. cit. p. 233).

5 **Bairdia submucronata** Jones and Kirkby.

Jones and Kirkby: Quart. Jour. Geo. Soc. (loc. cit.), pl. xxix., figs. 12-18.

= *B. mucronata* Reuss, var. *submucronata* Jones and Kirkby.

Trans. Geol. Soc. Glasgow, 1867.

This beautiful little species is very rare in these shales, for I have only found two specimens after the most careful scrutiny.

6 **Bairdia subelongata** Jones and Kirkby.

Jones and Kirkby: Quart. Jour. Geo. Soc. (loc. cit.), pl. xxx., figs. 1-10.

Vine: Carb. Entom. Yorks. (op. cit., p. 231).

Some few specimens found in the shales, may, I think, be referred to this species. Like the Yorkshire forms, they more closely resemble figs. 1 and 10 of the above-named plates than other figs. given by the authors.

In all probability *Bairdia ampla* Reuss, and *B. amputata* Kirkby will have to be added to the above list, but the specimens are not sufficiently worked as yet to allow complete identification.

Fam. II. *CYTHERIDÆ.*

7 **Cythere?** sp.

I have two or three forms that may be placed here, but I am somewhat doubtful about them.

8 **? Cythere intermedia** Munster.

Jones and Kirkby: Palæozoic Bivalved Entomos. Munster's sp. Ann. Mag. Nat. Hist., May 1865.

Rather rare in this locality.

9 **Darwinella? Berniciana** Jones.

Proceed. Berwicksh. Nat. Club, Vol. x., No. 2., p. 325, pl. ii., figs. 4*a* 4*b* 4*c*.

I have in my collection a few specimens of a very small Cytheroid which closely resembles the figures of the one named above. But though in shape the specimens may be referred to this species, I am rather doubtful about placing them here, because the genus *Darwinella* is an estuarine one, and if, as the author says, the Carboniferous species is associated in habitat with *Carbonia*, it probably is an estuarine form also. The other Entomostraca described as occurring in the Redesdale shales are probably deep water forms. However, with this notification I leave the specimens here, temporarily, at least.

Fam. VII. *CYTHERELLIDÆ.*

10 **Cytherella** sp. (?).

One of my forms is very much like *C. Tatei* Jones (Lower Carb. Entomos., Proceedings of the Berwicksh. Nat. Club, Aug. 1884, pl. ii., fig. 1), but the others are not sufficiently distinct for the purpose of identification. My specimens, however, are rather rare from this locality.

Fam. VIII. *LEPERDITIÆDÆ.*

For details see Ann. Mag. Nat. Hist., May 1865; Monthly Microscopical Journ., Oct. 1870.

Vine: Carb. Entomos., North Yorks. (op. cit., p. 234).

11 **Leperditia Okeni** Munster.

Jones and Kirkby: Notes on Palæozoic Biv. Entomos., Ann. Mag .Nat. Hist., May 1865, and *ibid*, Jan. 1875.

Vine: Carb. Entomos., &c. (op. cit., p. 235).

There is only one specimen in my collection that I can refer to this genus. The species is similar to the Yorkshire form, excepting that it is not quite so plump.

12 **Kirkbya Permiana** Jones.

Prof. King's Perm. Foss., p. 66, tab. xviii., fig. 1, *a*, *b*, *c*, *d*, as *Dithyrocaris* ibid.

Prof. T. R. Jones, Monthly Micro. Jour., Oct. 1870.

Vine: Carb. Entomos., &c. (op. cit., p. 236).

The specimens, though not abundant in these Northern Carboniferous Shales, are very characteristic, and beautifully reticulate. In the Redesdale Shales I have not found more than about four specimens in the coarser debris—in the finer there are many minute fragments of this species.

13 **Kirkbya umbonata** D'Eichwald.
Beyrichia id. D'Eich.

See Jones and Kirkby's paper on 'Some Carb. Ostracoda from Russia,' Ann. Mag. Nat. Hist., Jan. 1875.

Vine: Carb. Entomos., &c. (op. cit., p. 237).

This form is not so rare as No. 12, and the specimens are very large and bulky: the umbones, too, are much more prominent than in the Scotch specimens from Brockley, where this form is also rather rare, while *K. Permiana* is rather common.

14 **Kirkbya bipartita** Jones and Kirkby.

Jones and Kirkby: Trans. Geo. Soc. of Glasgow, 1877.

Vine: Carb. Entomos. (op. cit. p. 237).

I have only one specimen of this species from this locality. It is a rare form in the Scotch shales, and so far as I can judge it may be characterised as very rare here. The Northumberland form is beautifully reticulate, much more distinct than either the Yorkshire or the Scotch specimens in my possession.

15 **Kirkbya spinosa** Jones and Kirkby.

Jones and Kirkby: (?) Trans. Geo. Soc. Glasgow, 1877.

In the Scotch Shales, Cragenglen, Mr. Young tells me that this form is rather common; not so in the Redesdale shales: here I have only found one specimen, but the characters of the form are very distinct, and the valves are apparently faintly reticulate.

These are the whole of the Entomostraca that I have been able to identify with any degree of certainty. The generic abundance of specimens may be stated thus:—*Bairdia* very abundant, *Kirkbya* moderately abundant.

Fam. *MONTICULIPORIDÆ.*

See the Genus 'Monticulipora,' Prof. H. A. Nicholson, 1881.

1 **Monticulipora tumida** Phill. sp.

Nicholson, op. cit., p. 121., pl. iii., figs. 1 to 1*f*.

Notes on Monticulipora? tumida Phill. Nicholson, Ann. Mag. Nat. Hist., Nov. 1883.

I have given in a paper, sent on to the Yorks. Geol. Soc., very full details, with sections, of what I believe to be Phillips' *Calamopora tumida* from my Richmond material. It is very evident that the Yorkshire species is different from the Scotch species, *Tabulipora Urii* Young, with which it has been so long associated. Prof. Nicholson says that *his* description of *M. tumida* is 'founded upon specimens . . . .collected in the Carboniferous Shales of Redesdale. . . .where the species is very abundant and remarkably well preserved.' Associated with this species there is a variety,—

2 **Monticulipora tumida** Phill. Var. **miliaria** Nicholson, op. cit., p. 123, pl. iii., figs 2-2*c*.

I have examined both the species and the variety, and I can accept the whole of Professor Nicholson's remarks on the forms indicated; but there is another *Monticulipora* present in the Shales that does not appear to have been referred to by authors—unless under the title of *Chæteles* sp., or as *Ceriopora interporosa* in one of Mr. Howchin's lists in Professor Lebour's 'Geology of Northumberland.' The Scotch *C. interporosa* I have not found in any of the Northumberland Shales, and I cannot say whether the present form is the same as that indicated in the list referred to.

3 **Archæopora nexilis** De Kon.

Described in 1st Brit. Assoc. Rep. on Fossil Polyzoa, 1880. Also in Geol. Mag., 1880.

4 **Archæopora** sp. (new ?).

The first of these forms is present in the Redesdale Shales, but not common. The second form I shall place here provisionally, No. 4.

All the specimens are small, the largest, so far as known to me, scarcely exceeding a line in length—many considerably less; general

shape of the corallum (?) round or oblong, cell openings corallites (?) circular, separated by an interspace with from one to two circlets of very fine reticulations, invisible to the naked eye, only sparely indicated when a hand-glass is used, but perfectly distinct when examined with a one-inch object glass. I have not found the species in any of the Shales except the Redesdale, and here the forms are moderately abundant.

The Scotch species *A. nexilis* has been heretofore placed among the Polyzoa, but in his critical examination of species Mr. John Young, of the Hunterian Museum, Glasgow, writes me that in all probability we shall have to give up, as Polyzoa, this as well as one or two other species. For the present, therefore, it may be well to leave them with the Monticulipora.

MISCELLANEOUS FORMS UNCLASSIFIED.

1 **Palæocoryne radiatum** Duncan and Jenkins.

2 **Palæocoryne scoticum** Duncan and Jenkins.

3 Spiniferous processes of Polyzoa. Referred to by Mr. John Young.

With regard to the zoological position of these organisms, various opinions are still extant. My own opinion is that they are appendages of species of *Fenestella*, and Mr. Howchin many years ago sent me a very fine series from Haltwhistle, remarking at the same time that they were rather abundant in certain material in that locality. I have never had shale from Haltwhistle, so I cannot say. The student will find the organism well illustrated in Dr. Duncan's original paper on *Palæocoryne*, in the Phil. Trans., clix., p. 693, in a paper by Prof. John Young and Mr. J. Young in the Quart. Jour. Geo. Soc., Vol. xxx., 1874, and also in my own papers on *Palæocoryne*, &c., Science Gossip, Oct. and Nov., 1879.

---

4 **Ortonia carbonaria** J. Young (Annelida).

---

5 **Crinoidea:** fragments of different species.

6 **Archæocidaris** (?), fragments of.

---

7 **Brachiopoda (?).** A single specimen of some, to me, unknown species.

8 **Productus,** spines of—very numerous in fragments.

---

9 There is a small serrated spine (?) in these shales which I cannot name at present. It is very minute, and is rather abundant in the finer siftings; and I have found in one of the Scotch Shales a form very similar to that of Redesdale. I have not met with it in any other of the Northumberland Shales.

With regard to the finest siftings of the Redesdale Shales, it will be a satisfaction to the student to know that if small portions are mounted in balsam, fine specimens of transparent *Trochammina incerta* will be found, together with sections of spines, fragments of Brachiopodous shells, and reticulated portions of *Kirkbya Permiana*. The finer debris, however, is by no means so rich in organic forms as are some of the Scotch Shales.

To be continued.

Note.—In the October number, on p. 64, will the reader kindly place between the description of species 7 and 8, the mark ———. *Hyphasmapora Buskii* does not belong to the family Diploporidæ. Its classificatory position is not yet satisfactorily made out, but this note may prevent a misconception in the mind of the student, which its present association would engender.

ZOOLOGICAL NOTES—ARACHNIDA.

Pseudoscorpions new to Britain.—Having just now received, through the kindness of Mr. Denison Roebuck, two examples of *Chernes nodosus* (Schrank) for examination, I take this opportunity of recording it for the first time as a British species. It is not, however, new to me as British, as I have an example found in Dorsetshire several years ago, and another received during the past summer from Mr. R. H. Meade, of Bradford, Yorkshire. This species, like some others of the group, is I believe often found attached, by means of its forcipated palpi, to the legs of a fly, which, whatever may be the motive of the Pseudoscorpion, certainly furnishes it with a means of distribution. Mr. Meade's example was thus discovered. Of the two specimens sent by Mr. Roebuck, one had been taken at Bradford by Mr. William West, attached to the leg of a house-fly, and the other was found by Mr. George Hainsworth, of Leeds, in a book in his library.

I also take occasion now to record for the first time as British another pretty little species of a different genus—*Chthonius tenuis* L. Koch—found, though rarely, both in spring and autumn, among moss in woods in this neighbourhood, as well as *Chelifer subruber* E. Simon, of which examples were kindly sent to me in 1880 by Mr. W. P. Haydon, of Dover, found by that gentleman in his oil-mills. It is possible, though by no means certain, that this may be an imported species. I have since received another species of the same genus from Mr. Haydon, found in the same habitat. M. Simon considers it to be of an undescribed species; this also may possibly have been imported among the raw material used in the oil manufacture. I may mention that although I have been able to determine tolerably satisfactorily some of the species included by Dr. Leach in his short monograph (*Zool. Miscellany*, vol. iii., 1817), there are several of which I much want to see fresh examples, viz.:—*Obisium muscorum* Leach, *O. maritimum* Leach, and *Chelifer Latreillii* Leach.—O. P. Cambridge, Bloxworth, near Wareham, Dorsetshire, November 7th, 1884.

NOTES—COLEOPTERA.

Astynomus ædilis at Hull.—It may perhaps interest coleopterists to record that several specimens of *Astynomus ædilis* have been taken in Hull this autumn. Their occurrence here appears rare, for local observers of natural history are unfamiliar with them; but we have no coleopterist amongst us. I conjecture that they are foreign, brought by Norwegian and Swedish wood ships, for they have all been found in the streets or outskirts of the town.—N. F. Dobrée, Hull, November 4th, 1884.

NOTES—LEPIDOPTERA.

Satyrus tithonus in Lincolnshire.—In looking over the pages of Newman's 'British Butterflies' (p. 95), I find that the author there states that he has no records of the occurrence of this generally common species in Lincolnshire. I do not know whether it has since been recorded elsewhere for that county, but I may state that I observed it in great abundance about a dozen years ago near Owston Ferry, and more recently, 1882 and 1884, near Gainsborough.—J. W. CARTER, Bradford, September 8th, 1884.

Hepialus humuli.—I shall be glad to know if a much richer and stronger marking in the females of this species has been noticed by other lepidopterists this season. In a number of specimens brought into the house by my children, the orange markings on the yellow ground were much broader and more numerous than I ever noticed them before. Indeed a large specimen now before me makes a very beautiful variety. There is little doubt this common species would amply repay 'working' in our county, especially in the hilly moorland districts.—GEO. T. PORRITT, Huddersfield, October 17, 1884.

Agrotis ripæ at Spurn: a Correction.—In the report of the Yorkshire Naturalists' Union at Spurn, it is mentioned at p. 92 that the larvæ of *Agrotis riparia* were plentiful. The name should have been given as *A. ripæ*. —EDS.

Melanippe unangulata: a species hitherto unrecorded from Yorkshire.—I have for some time past been engaged at intervals in obtaining information with a view to compiling a list of the macro-lepidoptera of Barnsley and neighbourhood, and in connection therewith Mr. George Wilson, of Wakefield, kindly furnished a list of those species taken by him at or near Haw Park. *Melanippe unangulata* was included therein, much to my surprise, the more so as it finds no place in Mr. Porritt's excellent 'List of Yorkshire Lepidoptera'; fearing, therefore, some mistake, I corresponded with Mr. Wilson on the subject, with the result that he maintained his previous opinion; since then I have had the pleasure of seeing this species at his house, and of receiving from him specimens which are now in my cabinet. In conversation with him he stated that *M. unangulata* had been taken by Mr. Lumb, also of Wakefield, at least twenty years ago (say 1865) at Haw Park, and further that they both have taken it there in different seasons up to 1879, since which year he does not remember observing it; inasmuch, however, as during the past five years they have done but little collecting, there is every reason to suppose that it is to be met with yet, if worked for at the proper season. This appears satisfactorily to establish it as a Yorkshire species, and as such I suppose we must regard it in future.—WM. E. BRADY, Barnsley, November 15th, 1884.

Stenopteryx hybridalis and Argyresthia retinella at Huddersfield.—These two species, though generally common, have not previously been recorded for this district. Of *S. hybridalis* which seems to have been unusually abundant in the country this year, Mr. G. W. Crosland, junr., took two specimens on the north side of the town. *A. retinella* I have found not uncommonly in Butternab Wood.—GEO. T. PORRITT, Huddersfield, October 17, 1884.

Phoxopteryx diminutana in Yorkshire.—Among some micro-lepidoptera which I had put on one side from doubt as to their names, but which I submitted to Mr. C. G. Barrett, when he paid me a visit here several weeks ago, was a specimen of this species. I took it in Bishop's Wood on the occasion of the Union's visit to Sherburn on the 2nd of June last. It is new to the county.—GEO. T. PORRITT, Huddersfield, Oct. 17th, 1884.

Coleophora fusco-cuprella: a correction.—A less satisfactory result of Mr. Barrett's visit to me, is that for the present 'Doncaster' must be erased from the Yorkshire List as a locality for *Coleophora fusco-cuprella* (*Asychna fusco-ciliella*). The specimens taken there had been named for me as such, but Mr. Barrett satisfied me they were not that species.—GEO. T. PORRITT, Huddersfield, 17th October, 1884.

ORNITHOLOGICAL NOTES FROM UPPER COQUETDALE.

By JOHN CORDEAUX,

Great Cotes, Ulceby, Lincolnshire; Member of the British Ornithologists' Union; and of the British Association Migration Committee; &c.

The following notes, having reference to the birds of Upper Coquetdale, were jotted down from time to time in my note-book during a residence of some weeks at Harbottle, in the summer of 1884. For any previous knowledge regarding the ornithology of Northumberland, I am indebted to Mr. Hancock's 'Birds of Northumberland and Durham,' Mr. C. M. Adamson's 'Scraps about Birds,' and a paper on the 'Ornithology of Riding Mill-on-Tyne and neighbourhood,' by the Rev. H. H. Slater, published in the *Zoologist* for 1884, pp. 92–106. From personal observation as well as from sundry 'cracks' with local observers, keepers, and shepherds, I am convinced that at least with reference to the wild and thinly-populated hill country along the Scotch border, there remains room for further enquiry and investigation before a complete list of the avi-fauna of the district can be drawn up.

Missel Thrush, Turdus viscivorus L.

Appears to be very common. During the last week in June and first week in July I found them collected in large numbers on the moors, where almost at every step one or more rose from the long heather. These flocks appeared composed of young birds of the year.

Ring Ouzel, T. torquatus L.

I saw a few young birds on the moors near Dove's Crag, above Holystone, feeding on the berries of the mountain ash.

Dipper, Cinclus aquaticus Bechst.

Extremely common on the Coquet and its tributaries to the extreme limit of the Northumbrian border.

Wheatear, Saxicola œnanthe L.

Common everywhere in Cheviot, where the country is open and stony, both on the moors and the bracken-covered slopes of the hills.

Whinchat, Pratincola rubetra L.

Likewise very common about Harbottle, and throughout the Cheviot.

Stonechat, P. rubicola L.

Although resident, is by no means common; I only once saw it.

Redstart, Ruticilla phœnicurus L.

Very common wherever there is suitable cover and hedgerows. A favourite haunt is along the borders of the woods, where in serried rank the tall straight red-stemmed Scotch firs stand like a palisade; seen hawking for insects from his point of vantage, some broken branch projecting from the trunk, and with a background of grey lichen, the male is an exceedingly pretty object, well worth a few minutes' inspection with the binocular.

Whitethroat, Sylvia rufa Bodd.

Common.

Blackcap, S. atricapilla L.

The same remark applies.

Willow Wren, Phylloscopus trochilus L.

Everywhere abundant.

Wood Wren, P. sibilatrix Bechst.

I am certain I both saw and heard this pretty warbler at Dewshill Wood, near Holystone. This wood is part of the old Northumbrian forest, and full of old oak and beech, such as the Wood Wren delights in.

Tree Creeper, Certhia familiaris L.

Frequently seen in the firwoods.

Pied Wagtail, Motacilla lugubris Temm.

Very numerous along the Coquet.

Grey Wagtail, M. melanope Pallas.

Extremely common along the Coquet, and on the burns in the hills. They do not remain in the winter.

Meadow Pipit, Anthus pratensis L.

The Titlark is extremely common both on the moors and in every part of Cheviot.

Tree Pipit, A. trivialis L.

Also common in suitable localities.

Spotted Flycatcher, Muscicapa grisola L.

Is common in the neighbourhood of Harbottle.

Pied Flycatcher, M. atricapilla L.

From what was told me by the keeper and schoolmaster at Harbottle, both of whom possess a good knowledge of local birds, I have not the least doubt that this species nested at Harbottle in 1884. The nest was placed in a hole of an old alder tree, growing on the scaur side above the Coquet, at the bend below the castle known as the 'Devil's Elbow.' The young birds, the keeper told me, had been flown about ten days. It was on July 3rd that I examined the nesting place. Mr. Slater informs

me that he considers it by no means uncommon in suitable localities in South Northumberland. My informants, however, had never seen it in Coquetdale before.

Goldfinch, Carduelis elegans L.

Is rare; occurs occasionally in the autumn.

Lesser Redpole, Linota rufescens Vieill.

I noticed this species at Harbottle, on alder trees near the river.

Twite, L. flavirostris L.

I saw a single pair on the high fells, amongst heather, near the source of the Coquet (Thirlmoor). It appears to be by no means common in the district.

Bullfinch, Pyrrhula europæa Vieill.

Not uncommon.

Starling, Sturnus vulgaris L.

Can scarcely be called numerous. I saw one considerable flock on the fells near Shilmoor.

Jay, Garrulus glandarius L.

The keeper told me the Jay was never seen in the Harbottle Woods.

Magpie, Pica rustica Scop.

On the same authority is very rare. I never saw it.

Carrion Crow, Corvus corone L.

Very numerous; several pairs evidently nesting in the woods. The nests are exceedingly difficult to discover, as they are invariably placed in the leafy summit of some tall pine, and generally invisible except from just below the tree. The consequence is that the young as a rule get off, after which they seem well able to take care of themselves.

Hooded Crow, C. cornix L.

Occasionally in the winter; frequents the 'haughs' along the Coquet.

Raven, C. corax L.

Two pairs are known to nest in the neighbourhood.

Swift, Cypselus apus L.

Considerable numbers nest in the ruins of the Castle at Harbottle, where on summer evenings I have watched them entering and leaving their nests in the crevices between the stones. They appear to dart headlong into the hole in full flight, the instantaneous closing of the wings was barely perceptible to the eye.

Nightjar, Caprimulgus europæus L.

Very common.

Cuckoo, Cuculus canorus L.

Very common.

Sparrowhawk, Accipiter nisus L.

Not uncommon.

Kestrel, Falco tinnunculus L.

The same, and the most frequently seen.

Peregrine, Falco peregrinus Tunstall.

Is frequently seen. I have little doubt may yet be found nesting in the wilder recesses of the hills.

Merlin, F. æsalon Tunst.

Certainly the commonest of the smaller raptores both on the moors and in the hill district. When fishing the higher waters of the Coquet I used constantly to see this pretty little falcon. A favourite haunt appeared to be in the rowans planted for shelter round the houses of the shepherds. Near the house at Trowsburn I saw two or three young birds in the trees. Compared with both the Sparrowhawk and Kestrel the Merlin seems very tame, taking little heed of the solitary fisherman or pedestrian. I frequently saw them on the moors near Harbottle Lough: and on one occasion saw the male bird attack a young Heron, which it fairly drove, with much remonstrative croaking, from the vicinity.

Heron, Ardea cinerea L.

In the East Wood at Harbottle, is a heronry numbering twenty or thirty nests. The wood consists almost entirely of Scotch firs, and the nests are much scattered, as only such trees are chosen as have broken tops, affording a flat platform for the superincumbent mass of sticks. At this date (June 30th) some young were in the nest, which the keeper said were a second brood; also some fresh egg-shells below the trees. The castings beneath the firs on which the herons nested consisted mainly of the fur and bones of the water rat, remains of eels, and one small trout. During the last year or two a small colony of about four nests has been established in the West Wood. The heron seems extremely common in the neighbourhood, resorting even to the small burns in the recesses of the hills.

Wild Duck, Anas boschas L.

Not uncommon; resorting in considerable numbers to Harbottle Lough in the winter.

Teal, Querquedula crecca L.

I saw the female on Harbottle Lough, where she had evidently a young brood in the reeds.

Red-breasted Merganser, Mergus serrator L.

Occasionally visits Harbottle Lough in the winter.

Ringdove, Columba palumbus L.

Common, and said to be increasing in number.

Stockdove, C. Œnas L.

Is reported to nest annually in the holes of the cliffs on the moor; this requires confirmation. Mr. Slater says he has never satisfactorily ascertained the presence of the Stockdove in Tynedale, all reported occurrences proving on investigation to be Ringdoves.

Grouse, Lagopus scoticus Lath.

Plentiful. I saw young birds of the year very strong on the wing on Thirlmoor, on July 7th.

Black Grouse, Tetrao tetrix L.

Very common on the moors above Harbottle, in the neighbourhood of the pine woods.

Corn Crake, Crex pratensis Bechst.

Judging from its call notes, very plentiful.

Golden Plover, Charadrius pluvialis L.

Nesting on the moors.

Lapwing, Vanellus vulgaris Bechst.

Very plentiful; had congregated in considerable flocks by the last week in June.

Woodcock, Scolopax rusticula L.

Nests sparingly in the Harbottle Woods.

Snipe, Gallinago cœlestis Frenzel.

Not uncommon, and nesting regularly in the district.

Common Sandpiper, Totanus hypoleucus L.

Extremely common on the Coquet and tributary burns. I know of no locality where it is so numerously represented, not only about the river flats, but in the wildest and most secluded recesses of the hills. Twice when fishing I saw this Sandpiper perched on the dead branches of the Scotch fir at a considerable height above the ground.

Redshank, Totanus calidris L.

The keeper told me that a few pair of a much larger Sandpiper frequented the 'haughs' below Sharperton Bridge during the summer. He described them as very noisy birds. I can only conjecture they belonged to this species, or it is possible may prove Ringed Plover.

Curlew, Numenius arquata L.

Common; nesting regularly in the district. There was a young

brood in a meadow close to the house I was lodging at. The old bird extremely noisy and watchful, and not unfrequently perched on a rail fence.

Black-headed Gull, Larus ridibundus L.

About a hundred pairs breed on the bog at the south end of Harbottle Lough. I saw no young birds on the lough during my visits, but very frequently came across the broken eggs on the moors, where they had been carried by Carrion Crows, which always seemed to be foraging about the locality; so it is probable very few get off.

Lesser Black-backed Gull, Larus fuscus L.

Occasionally obtained; is not uncommon about the river in pairs in the spring.

ORNITHOLOGICAL NOTES.

Occurrence of Tengmalm's Owl on the Yorkshire Coast.—On the 18th of October last Mr. J. R. Grindell shot a fine specimen of this rare little straggler from North and East Europe, from a tree at Holmpton in Holderness, and sent it to me for my local collection of birds. The wind for two days previously had been blowing from the west with increasing force.—PHILIP W. LAWTON, Easington.

—Mr. Lawton very kindly sent the specimen for my inspection. It is a mature bird, and the sixth Yorkshire occurrence of *Nyctala tengmalmi* Gmel.—W.E.C.

Dotterel (Eudromias morinellus) at Easington in Holderness.—Seven Dotterel were seen in a tillage field near the mill on the 11th of October and again in the same field on the 13th. This species occurs here annually on the spring migration, but I have not noted it here before in the autumn.—PHILIP W. LAWTON, Easington, Hull, Oct. 25th, 1884.

The Food of Sparrows.—Having been asked to collect information on the food of Sparrows for the Norfolk Chamber of Agriculture, with the view of ascertaining whether the good which they do in eating insects and caterpillars and seeds of weeds can be made to counterbalance the enormous destruction of corn, I should feel infinitely obliged to anyone who can give me dated dissections (however few) for any months except July and August, of the crops of Sparrows. It is evident that the solution of the Sparrow question can only be arrived at by a large number of dissections made at different times and in different places; and when insects are found, which in adult Sparrows is very seldom, by obtaining the assistance of a competent entomologist to name them. Insects are so quickly assimilated in adult Sparrows that there is no chance of finding them in the gizzard, except fragments of beetle cases, but they might doubtless be found in the crop, though I cannot say that I have found any. If the gizzard be also examined the microscope or magnifying glass must be used; but I agree with Colonel Russell, of Romford, who has paid so much attention to the Sparrow question, that if there is no food in the crop an adult Sparrow is scarcely worth opening, but the case is very different with young ones. Digestion is quick in the Sparrow, and birds taken at night with nets are far less likely to contain anything in their crops than birds shot in the day. After sending in my return to the Chamber of Agriculture, I propose to print the results of the investigation in one of our Natural History journals, when due acknowledgment will be made to any who have been kind enough to assist in what is really becoming now a very important question as concerns our farmers.—J. H. GURNEY, jun., Hill House, Northrepps, Norwich.

Do Insect-eating Birds cast Pellets?—I was watching in my small aviary a Robin, which I had kept for some time, feeding it on seeds, flies, and mealworms—the latter it was very fond of, and would take them out of my hand. But on offering it one the other day I was surprised to see it took no notice, but seemed ill, being puffed out, and twitching its head from side to side, and closing its eyes. On approaching it more closely I saw it give a sudden jerk, and with its bill wide open it threw out a larger pellet than I should have thought possible from so small a bird. On examining the pellet I found the heads and skins of the mealworm, and the wing-cases and legs of other small insects. The question naturally arose—do insect-eating birds cast pellets?—W. BARBER, Lincoln, September 25th, 1884.

Great Titmouse attacking Stuffed Birds.—A specimen of the Great Tit (*Parus major*), popularly known as 'Joe Bent,' in my possession, was yesterday guilty of a series of assaults on several stuffed birds which had been temporarily placed on a shelf in the room in which he was kept. Being aware of the fierce nature of this species, my specimen had not been admitted into the aviary, but was kept in a small cage by himself. About midday yesterday 'Joe Bent' escaped from his cage, apparently by forcing apart two rather loose wires, and was discovered sitting on the curtain pole over the window. After making several ineffectual attempts to secure the rascal my wife locked him into the room, believing, in her innocence, that such a small bird was incapable of doing any mischief! On returning to the room after an hour's absence, eight of the stuffed birds were found lying on the ground at the foot of the shelf on which they had been placed, and on examining them it was discovered that their eyes had been pecked out, their heads and breasts opened and a certain amount of 'stuffing' extracted. One Goldfinch was completely scalped, not a single feather being left on his head; even such a large bird as a Snipe had been attacked, one specimen having lost both eyes and had its throat opened. Two Cole Tits had their heads opened, and one of them, in addition to losing its eyes, was disembowelled. The only birds which escaped injury were the Blue Tits and the Bullfinches. On search being made for the mischievous little bird it was discovered that he had re-entered his cage and was busily engaged in cracking hemp seeds as if nothing had happened. As 'Joe' had been daily supplied with animal food his conduct under the circumstances was inexcusable.—H. GOSS, Berrylands, Surbiton Hill, Surrey, 6th Nov., 1884.

Destruction of Bird-life at the Farne Islands.—The following remarks are suggested by Mr. Slater's paper on the Farne Islands in the *Naturalist* for November. He has, unhappily, only too much reason to denounce the brutal destruction of the seabirds by the stupid vagabonds of the Tyne, who come in shiploads and fire all day their broadsides at the islands. But perhaps he is not aware that this state of things is made possible by the action of a certain Association which has been formed nominally for the preservation of the birds, and professes to accomplish this purpose by taking every year many thousands of the first and even second sittings of the eggs and selling them up and down the country for eating, in order to defray rent and other expenses. The result is, as I was informed on authority which I could not question, that the birds which are hatched from the last sitting come off their nests so late that they are hardly able to escape by flight when the close season is at an end, and they fall an easy prey to the steamboat 'sportsmen,' who do not land, but strew acres of the water with dead and dying birds which they are not at the trouble to recover. When I was there at the end of August there were young Gulls half fledged, and Puffins hardly able to fly. Besides this, as I was told, the Association allows its members and their friends to spend hours upon the islands both when the birds are sitting and also when they are feeding their young, seasons when of course they should be left as undisturbed as possible. To keep up this farce of protection, the Association attempts to charge a fee of sixpence a head upon all persons who land on the islands. Bare respect for my feathered friends forbade my adding my quota to the funds of such an Association, and I need hardly add that their secretary did not make a second application.—H. E. FOX, Durham, November 4th, 1884.

CONCHOLOGICAL NOTES.

Large Anodons in Nottinghamshire.—The dry summer has given collectors special facilities for obtaining the large fresh-water mussels (see note on large Unios obtained at Ossington by Mr. Gain). Quite recently, being exploring at Sutton-in-Ashfield, I found the water in the mill-dam very low, leaving a belt of beach exposed, varying from 20 to 40 yards wide. Some 3 or 4 feet thickness of mud had dried quite hard enough for one to walk on, and gather the shells that lay stranded. *A. cygnea* was the only species present; many were broken; but leaving hundreds of perfect specimens from which I obtained a fine selection. On cleaning them the type form appears most common, with amongst them a few var. '*zellensis*.' In size the largest was $7\frac{1}{16}$ in. long, three more 7 in., several were $6\frac{15}{16}$ in., $6\frac{14}{16}$ in., $6\frac{13}{16}$ in., quite two dozen $6\frac{3}{4}$ in., two score or more between $6\frac{1}{2}$ in. and $6\frac{3}{4}$ in., and probably 200 measure between 6 in. and $6\frac{1}{2}$ in. These are the largest yet obtained in this county (so far as is known). No doubt other collectors will be able to give a better account of the large mussels now, than they would have done a year ago.—C. T. Musson, November, 1884.

Unio pictorum at Ossington, Notts.—I have found a portion of the border of the lake untouched by the navvies. This has yielded shells still larger than those previously found. I have several over five inches in length, the largest being five inches and three-sixteenths.—W. Gain, Tuxford, Newark, October 20th.

Land and Freshwater Shells collected in County Durham, 1883 and 1884.—As Mr. Roebuck has given an account of a few slugs collected in the county of Durham by myself, perhaps the following list of shells also collected by myself in the years 1883 and 1884 may be of interest. All the shells were taken within three miles of the city of Durham. *Helix hortensis* and var. *roseolabiata; H. arbustorum* and var. *flavescens;* also a near approach to var. *alpestris; H. aspersa, H. hispida* and var. *albida, H. rotundata, H. nemoralis, H. sericea, Zonites nitidulus, Z. cellarius* and var. *albinos, Z. fulvus, Z. crystallinus, Z. purus, Z. excavatus, Z. alliarius, Vitrina pellucida, Pupa umbilicata, Clausilia rugosa, C. laminata, Cochlicopa lubrica, Carychium minimum, Lymnea peregra* and an approach to var. *labiosa*, also one specimen with a broad white band and several indistinct markings on the last whorl; *Ancylus lacustris, Physa fontinalis*, and *Pisidium fontinale.*

The following are from various localities in Durham county:—*H. cantiana* and *H. caperata*, Billingham; *H. ericetorum, Pupa marginata, Planorbis spirorbis, P. vortex, Physa hypnorum, P. fontinalis*, and *Lymnea peregra*, Seaton Carew; *Planorbis contortus, P. complanatus, P. carinatus, Valvata cristata, V. piscinalis, Bythinia tentaculata* and var. *albida, Sphærium corneum*, and *Anodonta cygnea*, near Horton; *H. aculeata* and *H. pulchella*, Barnard Castle; *H. fusca*, Middleton-one-Row; and *Balea perversa*, near Chester-le-Street. Many of the foregoing have been met with in two or three localities, but I merely give one, space forbidding more.—Baker Hudson, 15, Waterloo Road, Middlesbrough, August 25th, 1884.

Bulimus acutus: a Query.—The distribution of this shell is peculiar. It is an exclusively coast species, never found inland; and it is a Western or Atlantic species, never having been found on the East coasts of Great Britain. It occurs at intervals all round the Irish and Manx coasts, on the South coast of England and the West coasts of Scotland, Wales and England from Sutherlandshire to Cornwall. The counties for which it has actually been placed on record are:—Channel Isles, East Sussex, Isle of Wight, Dorset, Devon (N. & S.), Cornwall (E. & W.), North Somerset, West Gloucester, Carmarthen, Pembroke, Anglesey, Carnarvon, Denbigh, Cheshire, Isle of Man, Cantire, Iona, Mull, Skye, West Sutherland, Hebrides, Donegal, Sligo, West Mayo, Cork, Waterford, Wexford, Dublin, and Down. Will conchological readers kindly add to this information, and in particular will they state whether or not it occurs in Lancashire, Westmoreland, or Cumberland, for none of which has it yet been reported. As it is usually abundant wherever it occurs, there ought to be no difficulty about saying whether or not it occurs at any of the numerous sea-side resorts of Lancashire and Cumberland; and in this case negative evidence is decidedly of value.

DESCRIPTION OF A SPECIES OF ANDREÆA NEW TO SCIENCE

(Andreæa commutata Limpricht).

By GUSTAV LIMPRICHT.

(Translated from the 61 Jahresbericht der Schlesischen Gesellschaft (1884), and read before the Manchester Cryptogamic Society, by W. H. Pearson.)

Synonymy. *Andreæa falcata* Raben. eur. n. 1301 a et b sed non *A. falcata* Schimp., Bryol. eur., tab. 634.

Monoicous. In habit near to *A. crassinervia.* Grows in opaque or slightly glossy black tufts; stems $1\frac{1}{2}$—$2\frac{1}{2}$ cm. long; generally loosely leaved. Leaves strongly falcato-secund, long (1·5—1·8 mm.), gradually tapering from a short ovate and single-layered base (0·3—0·36 mm. broad) to a subulate apex of which the lower part consists of several rows of cells and a double-layered lamina, the upper part alone being composed entirely of the nerve. Nerve very strong, flattened below consisting of 2 and 3 layers, occupying about the third of the breadth of the leaf; a little higher composed of up to 7 layers, strongly convex at the back, the apex biconvex, 4 and 5 layers. Cells in the lower portion of the leaf small (0·007 and 0·006 mm.) roundish quadrate. Male flowers small, ultimately pseudo-lateral, often below one another on the slender laxly-leaved branches; inner perigonial leaves nerveless, crenulate at the margin and strongly papillose at the back. Antheridia large, 0·38—0·45 mm. long. Pedicel short (0·035 mm.). Paraphyses of the same length, yellow, filiform (not ligulate) sometimes branched. Inner perichætial leaves convolute, larger, obovato-oblong above rotundate with very small, apiculate or ligulate apex, single layer, nerveless (only at the base a flattened nerve of 2 layers is indistinctly noted), margin crenulate at the back, large papillæ. Capsule large unopened 1·05 mm. long by 0·5 mm. broad, with a thick neck (0·3 mm. long). Spores large (0·032—0·035 up to 0·04 mm.), in the mass ochre-coloured, seen by transmitted light greenish-brown, very finely granulate. Ripens in April.

Collected on rocks of the Ockerthal in the Hartz, April 1876, by Pastor W. Bertram, and contributed to Raben. Bryoth. eur. n. 1301 b. (The specimens which Pastor Bertram sent to the Silesian Botanical Exchange Society, from the same station, belong to *A. Rothii* var. and are largely mixed with *Andr. petrophila*). Near Willerzie, Belgium, on quartz rocks, leg. F. Gravet (Rabenh. Bryoth. n. 1301 a.). Britain:—rocks, Loch Kandor, Braemar, leg. G. E. Hunt, July 1871: Borrowdale, Cumberland, leg. G. E. Hunt, May 1871: and rocks near Buttermere, leg. G. E. Hunt. From the last station, sent as *A. rupestris.*

The specimens from Bernina, leg. Schimper, and from the Hartz

(Herb. Hampe), agree in every particular with the *Andreæa falcata* Sch. *vide* the text and tab. 634. Bryol. eur.: their 1·0—1·2 mm. long leaves suddenly narrow from the obovate base (0·24—0·27 mm.) into a lanceolate subulate point, with a smaller single-layered lamina to the apex, at or before which the reddish semi-pellucid nerve vanishes. The inner perichætial leaves are broadly nerved at the apex, the nerve occupying nearly all the leaf. The perigonial and perichætial leaves are not crenulate at the margin and show no papillæ; the antheridia also are shorter (0·28 mm.); the paraphyses, however, are longer and afterwards generally ligulate above. The above-mentioned station, Loch Kandor, is quoted by Schimper, Syn., ed. 2, p. 821, for his *A. falcata*, but my specimens bear the following note in the handwriting of G. E. Hunt—'intermediate between falcata and crassinervia.'

The nerve of *A. falcata* Sch. is double-layered at the base, four layered higher up, plano-convex, a little projecting at the back, above three and two layered. What Sch. and C. Muller called papillæ on the subulate part of the leaf, are only slightly mamillate cell-walls exactly as we find in *A. crassinervia* and *A. frigida.*

In a recent letter from Herr Limpricht he says, 'I enclose you specimens of *Andreæa commutata* from three stations, collected by the late G. E. Hunt, whose early death has been a great loss to science.'

I may add that some of our Manchester muscologists question the right of *A. commutata* to rank as a species; having no critical knowledge of the allied species, I venture no opinion.—W. H. P.

CRYPTOGAMIC NOTES.

Manchester Cryptogamic Society.—At a late monthly meeting, Dr. B. Carrington, F.R.S.E., in the chair, the Honorary Secretary exhibited specimens of *Taylonia tenuis*, which had been recently gathered on the Benbradagh Mountains, Co. Derry, by Mr. S. A. Stewart. The Flora of Rathlin, Co. Antrim, which had been reported upon by Mr. Stewart, was also placed upon the table. Mr. W. H. Pearson exhibited specimens of *Marsupiella sparsifolia*, collected by J. and T. Sim, on Loch-na-Gar; and also several new mosses and hepaties, recently published by Herr Gustav Limpricht.

Manchester Cryptogamic Society, October 20th, 1884, Dr. B. Carrington, F.R.S.E., in the chair. Mr. George Stabler, of Levens, sent a choice collection of rare mosses and hepatics collected by him in Braemar last July. Amongst the rarest may be mentioned *Dicranum molle*; *Andreæa nivalis*; *Tortula tortuosa* in fruit; *Harpanthus Fotowii*, only previously known from Shetland as British; *Mörckia norvegica*; and *Marsupella Stableri.* Specimens were distributed amongst the members. Mr. James Percival sent specimens of *Bartramia rigida* from near Barmouth. Mr. James Cash reported the discovery of *Trichostomum nitidum* on rocks by the sea, Colvend, Kirkcudbright, by himself and Mr. M'Andrew. Mr. Pearson exhibited some new European mosses received from Herr Limpricht.—THOMAS ROGERS, Hon. Sec.

Barbula princeps (a query).—In the London Catalogue of British Mosses, *Barbula princeps* is given as indigenous to Province 10 (Yorkshire). Will anyone acquainted with the fact be good enough to state in what part of the county it was discovered, and by whom?—J. C.

Naturalist,

HYMENOPTERA near YORK in 1882 and 1883.

By THOMAS WILSON,
Holgate, near York.

The following species of Saw-flies and Ichneumon-flies were captured or bred by me during the seasons of 1882 and 1883, and those marked * are additional to the Yorkshire lists, as given in the Transactions of the Yorkshire Naturalists' Union. Mr. Cameron very kindly named all the Saw-flies for me.

TENTHREDINA.

Tenthredo olivacea Kl.

Found a few of this insect amongst birch in Askham Bog and Acomb Wood, 1882.

***Tenthredo lachlaniana** Cam.

I was fortunate in taking an example of this species in 1882. It was new to Scotland in 1878. I believe this is the first record of it for England. It is specially interesting, therefore, being found in this locality (Holgate).

***Tenthredo scalaris** Kl.

One example, Acomb Wood, 1883.

***Tenthredo scrdida** Thoms.

Found a good many of this interesting species in 1883. Its beautiful yellow colour renders it a very conspicuous object when beaten into an umbrella. Female, yellow; male, slender, dark brown. From hawthorn.

***Macrophya albicincta** Schr.

One example of this, 1882.

DOLERIDES.

***Dolerus vestigialis** Kl.

Took one of this insect, 1882.

***Dolerus elongatus** (?) Thoms.

Holgate.

EMPHYTIDES.

***Pœcilosoma luteolum** Kl.

Bred this species from larva taken on *Lysimachia vulgaris*, Askham Bog, 1882.

***Emphytus cingulatus**

Beaten out of oak, 1882.

SELANDRIADES.

***Selandria morio** Fab.

Taken in the York Nurseries, 1883.

*Eriocampa varipes Kl.

*Eriocampa rosæ

These two species taken in the York Nurseries, 1883.

*Blennocampa sericans Htg.

*Blennocampa bipunctata Kl.

*Blennocampa cinereipes Kl.

Blennocampa pusilla Kl.

These four species taken in the York Nurseries, 1883.

*Blennocampa fuscipennis Fall.

Beat this insect out of birch, Askham Bog, 1883.

*Hoplocampa testudinea Kl.

*Hoplocampa pectoralis Thoms.

These two species are the first of the genus that have been detected in this locality. They are therefore very interesting additions to the fauna of York.

NEMATINA.

*Cladius difformis Pz.

Captured in 1882 and 1883, Holgate.

*Cladius Drewseni Thoms.

Holgate, 1883.

Nematus lucidus Pz.

Beat three examples of this insect from hawthorn, 1883.

*Nematus consobrinus Voll.

Two examples, Holgate, 1882.

*Nematus crassulus Dlbm.

*Nematus Westermanni Thoms.

*Nematus albipennis Htg.

Found at Holgate, 1883.

*Nematus salicivorus.

From willows, 1883.

*Cryptocampus mucronatus H.

Beaten from willows, 1883.

ABIIDES.

*Abia nitens Thoms.

Captured this insect on Strensall Common during the Y.N.U. visit there in July, 1883.

HYLOTOMIDES.

*Hylotoma pagana Pz.

Took about a dozen larvæ of this species on *Rosa Manetti* in August. The following month six of the perfect fly came out, 1883.

LOPHYRIDES.

***Lophyrus Pini** L.

I had the pleasure of breeding nine examples of this insect from larvæ taken on Scotch pine in 1881. Also took a quantity of larvæ from the same species of pine on Strensall Common in 1883.

ICHNEUMONIDÆ.

Ichneumon derasus

Beat one example of this insect out of a hawthorn hedge, 1883.

CRYPTIDÆ.

***Cryptus tricolor** Gr.

A female of this species taken amongst oak, 1883.

***Cryptus cimbicis**

Bred several examples of this, male and female, from a cocoon of *Trichiosoma betuleti.* Taken at Holgate, 1882.

***Cryptus sponsor** (Fab.)

Found one example of this at large.

BOOK NOTICES.

'The Entomologist' Synonymic List of British Lepidoptera.—Compiled in conformity with the law of priority by Richard South. (London: West, Newman & Co., 1884. pp. 40+40).

So far as concerns typography and general get-up this list is substantially a reproduction of Doubleday's (which has so long been out of date and out of print) and is equal in merit to Messrs. West and Newman's other publications; although improvements might have been adopted with advantage. For instance, the small capitals used for specific names are not at all clear or pleasant to the eye, and might have been discarded for lower-case letters, or better still, for the thick type employed for names of families. It also seems a decided mistake not to print binomial names in full (thus, *Papilio machaon* L.) instead of adopting the unscientific practice too much in vogue with lepidopterists of using specific names only; and it is unnecessary to insert a comma between the specific name and that of the author who bestowed it. But these questions do not affect the scientific character of the work, and it will be of more importance to consider how Mr. South acquits himself in questions of nomenclature and arrangement, and how he deals with synonymy and variation. In his preface he freely acknowledges that he has confined himself to collating the work of others, so far as nomenclature and arrangement go. This is an advantage, inasmuch as lists, as a rule, should not deviate too far from published monographs. Mr. South's arrangement differs materially from Doubleday's, and approximates more to Stainton's and Staudinger's. For our own part we never agreed with Doubleday's separation of the Noctuæ from the Bombyces by the interposition of the Geometræ, nor the union of Sphinges and Bombyces as Nocturni. In these and other respects we preferred the older arrangements, and are glad to find that Mr. South is of the same opinion. We also think he is right in removing the 'Plumes' to a position nearer the Pyrales. But we cannot think that he has yet fixed upon their true location. Instead of placing them between the Pyrales and Crambites, they would probably be much better located after the latter group, and immediately preceding the Tortrices. The minor changes, for the most part based upon Staudinger, are necessarily matters of opinion. The Pseudobombyces revert to their old and familiar position as a family of the Bombyces, the genera *Petasia* (now *Asteroscopus*), *Diloba*, *Demas*, *Aventia*, *Boletobia*, and the

families *Herminiidæ* and *Hypenidæ* are now classed among the Noctuæ, the *Psychidæ* among the Tineæ, and the Bombyces are increased by the inclusion at their head of *Sarrothripa*, *Earias*, *Hylophila*, and the *Nolidæ*, and at their foot of *Cymatophora* and *Thyatira*, which latter seem to be the natural links by which the Bombyces pass into the Noctuæ. The Pterophori are now split up into numerous genera, in place of the very few to which we have hitherto been accustomed. The list of Noctuæ appears to have been carelessly done. Why should two genera bear the same name? *Calamia* and *Aporophyla* are each used twice. In the *Leucaniidæ* we find *Calamia phragmitidis* followed by five other genera, and then comes *Calamia lutosa*. Again, in the *Apameidæ* we find *Aporophyla australis*; and in another family, *Hadenidæ*, *Aporophyla* is again used for two species formerly of the genus *Epunda*. As to nomenclature, Mr. South has wisely followed Staudinger and Wocke, thereby accelerating the much-desired assimilation of English to continental usage. The changes which are entailed by Mr. South's adoption of a more correct nomenclature may not be very pleasing to some or our collectors, but for them it will be wholesome practice to learn to use scientific nomenclature precisely and accurately. Space prevents our mentioning the changes of familiar names which the list presents, and we will confine ourselves to the two which are most likely to perplex collectors. Doubleday's *Triphæna subsequa* becomes *T. orbona*, and his *T. orbona* has to take the name of *T. comes*. *Cloantha perspicillaris* becomes *C. polyodon*, and the *Xylophasia* will now be called *X. monoglypha*. On the whole Mr. South has made a decided advance in the rectification of our insular nomenclature, though he errs occasionally in not applying the strict law of priority. For instance, the Goat Moth was named by Linnæus as *Phalæna* (*Bombyx*) *Cossus*, and ought therefore to stand in our lists as *Cossus cossus* L. Then again, what rule has been followed in naming the Meadow Brown Butterfly and the Clouded Buff Moth? The male and female of each of these insects were described as distinct species by Linnæus. If the first-mentioned insect is to continue to be *Satyrus janira*, on the ground of the male name taking precedence of the female one, then that of the latter should become *Nemeophila sannio* and not *N. russula*. If on the other hand the law of priority is to apply in all its strictness, then *Satyrus jurtina* and *Nemeophila sannio* are the correct names. We doubt whether there is any justification for the practice which Mr. South adopts (and defends) of altering the spelling of names to make them grammatically or philologically correct. The true object of nomenclature is not served by such corrections; and if any are made they should be carefully indicated, as is done by Dr. Staudinger. In respect of varieties, Mr. South's list has been but imperfectly done, and his researches seem to have been confined to one or two of the principal journals. We miss any mention of some varieties which have been described in provincial journals. It would have been better also if the list had distinguished clearly between the different categories of varieties, nor would it have been out of place to have explained the meaning of the asterisks appended to a few of the varietal names.

But with all its faults the list is a distinct advance upon its predecessors, and as such should be adopted as the standard of nomenclature until it is superseded—as we hope it soon will be—by one of a more authoritative character. The Entomological Society of London should no longer leave to private enterprise the issue of a list of British Lepidoptera, and ought to lead the van. The Society would do well to follow the example of other scientific societies—notably that of the British Ornithologists' Union—and appoint a committee to draw up a list that shall command the confidence and respect of all students of that order, and in such a way as cannot be done by the venture of any private individual or trading firm. But not only do we require a new catalogue, but also a new monograph of British Lepidoptera. The weakness of British Lepidopterists is shown by the fact that there is no complete British work of recent date. Those of Stephens, Wood, Westwood, &c., are now old history, while Stainton's admirable little work does not profess to be more than a 'Manual,' and Newman's, although the woodcuts are good and the descriptions carefully drawn up, can hardly be considered as more than a collector's handbook, inasmuch as it ignores synonymy and slurs over life history and geographical distribution. There is ample room for a work on British Lepidoptera which shall deal adequately with every aspect of its subject.—Eds.

The Chester Society of Natural Science have published — under the title of 'A Short Hand-book of Natural History, for use at the Annual Conversaziones and other meetings of the Society' (Chester, G. R. Griffith, 1884, 28 pages, price 6d.)—a most valuable introduction to the whole scheme of classification of the animal, vegetable, and mineral kingdoms, calculated to be of much use, especially to microscopists. We have ourselves long felt the need of such a handbook, as well of what it will tend to secure, a more systematic and thoughtful arrangement and selection of suitable slides or objects for exhibition. It is to Mr. C. F. Fish that the Society is indebted for the authorship of this valuable little manual, although the pamphlet itself gives no indication on this point.

NOTES AND NEWS.

We have at present under consideration the question as to the most advisable form in which to keep a monthly record of meteorological observations in next year's Naturalist, and we should be glad to have suggestions from our readers. Ours being a natural history journal, the object we have in view is to give such a summary of meteorological phenomena as is best calculated to throw light on synchronous occurrences in natural history, such as the migratory movements of birds, the flowering and leafing of plants, or the development or appearance of insects, &c. We therefore feel that it is hardly within our province to give detailed observations on any single series of phenomena, such as we have hitherto done for rainfall, for several reasons. One is that a sufficiently widespread record of the kind would occupy more space than we can well spare, while a more important reason is that it is the sum total of all meteorological phenomena that exerts influence of the kind we refer to. We should like to have a digested summary showing week by week the general character of the weather in the North of England, the direction and force of the wind, the variations in barometric pressure, the relative amount of cloud or sunlight, and the fluctuations of the thermometer. If we could secure such a record as this we should arrange to publish simultaneously a similarly digested report or summary of periodical natural phenomena.

The Committee for the Exploration of the Raygill Fissure in Lothersdale, Yorkshire, of which the members are Professors A. H. Green and L. C. Miall, and Messrs. John Brigg and James W. Davis, has been reappointed by the British Association, with a renewed grant of £15. Their operations had during the past year been entirely suspended, pending the quarrying out of an obstructive block of limestone in the fissure.

The Bird-migration Committee also has been reappointed by the British Association, which has shown its appreciation of the value of the work by increasing the grant from £20 to £30. It now consists of Mr. J. Cordeaux (who acts as Secretary), Mr. J. A. Harvie Brown, Professor A. Newton, Mr. R. M. Barrington, Mr. A. G. More, Mr. J. Hardy, and Mr. W. Eagle Clarke.

It will not be out of place here to mention that the Committee request co-operation, and that in particular Mr. Clarke, who undertakes as his charge the West Coast of England and Wales, would particularly request ornithologists and others to assist in making his report as complete as possible, by sending to him at 18, Claremont Road, Headingley, Leeds, their observations on the migratory movements of all species, and on the occurrence of rare and uncommon ones, within the West Coast region (inclusive of inland localities) during the spring and autumn of the present year. When possible such notes should be accompanied by indications as to the direction of the wind and the state of the weather immediately preceding the occurrence of uncommon birds or during the observations of migratory movements. The notes sent will be incorporated with the reports from the light-houses and light-vessels, and all assistance given will be adequately acknowledged.

Such of our readers as may have specimens of pseudo-scorpions, book-scorpions, or chelifers, would do well to submit them to the Rev. O. Pickard Cambridge, M.A., of Bloxworth Rectory, Wareham, Dorsetshire, who is working up materials for a monograph on our British species, all of which he wishes to describe and figure. The species of this group are but little known, and that no one need fear that his specimens are valueless is evidenced by the fact that certain Yorkshire examples which we lately sent to Mr. Cambridge are pronounced by him as being of a species as yet unrecorded as British.

The second annual meeting of the Bradford Microscopical Society was held on the 1st of October, when Mr. W. Townend, F.R.M.S., was elected president; Mr. J. E. Fawcett, F.R.M.S., and Dr. Hime, vice-presidents; Mr. J. Bennett, treasurer; Mr. W. L. Jefferson, librarian; and Mr. Chas. E. Waddington, hon. secretary; with Messrs. A. J. Kershaw, Walsh, Scorah, Gaskarth, West, and J. E. Wilson to complete the committee. The report has since been printed, and, together with the syllabus for 1884-85, is now before us. Considerable progress is reported, and an increase of twelve members, while lists of members, books and slides are included in the pamphlet.

RAINFALL FOR OCTOBER 1884.

STATION & OBSERVER.	Height of Rain-Gauge above Sea-level.	Total Rainfall for Month.	No. of Days on which Rain fell.	Total Fall to Date.				Heaviest Single Day's Fall.	
				In 1884.	Average of Past Years.	No. of Years.	Years of Average.	Amount.	Date.
	Feet.	Inches	Days	Inches.	Inches.	No.	Years.	Inches	
*Derringham, Hull. Wm. Lawton	10	0·87	14	14·50	18·96	34	1850-83	0·22	11th.
Goole.—John Harrison...	25	1·05	11	15·78	—	9	1875-83	0·18	27th.
Wetwang, The Wolds, Rev. E. Maule Cole	235	1·38	11	18·83	—	—	—	0·28	10th.
Scarborough.— Allan Rowntree	130	2·08	13	17·12	23·20	18	1866-83	0·65	9th.
Baldersby, Thirsk.— W. Gregson	100	1·15	11	21·91	—	—	—	0·28	11th.
Masham.—Thos. Carter..	269	1·38	16	23·85	—	—	—	0·34	11th.
Shadwell, Leeds.— Geo. Paul	500	1·41	13	21·31	—	—	—	0·32	26th.
Leeds.—The Museum ...	183	1·50	20	19·54	20·73	30	{1853-62 / 1865-84}	0·31	26th.
Horsforth.—James Fox	350	1·35	17	21·14	26·93	15	1870-84	0·23 0·23	26th. 27th.
Barnsley.—Dr. Sadler...	350	1·14	12	18·28	—	2	1882-83	0·39	26th.
Wentworth Castle. Wm. Fisher	520	1·29	12	19·60	27·91	8	1877-84	0·37	26th.
Ingbirchworth.— J. H. Taylor	853	1·59	14	26·87	—	2	1882-83	0·50	26th.
Dalton, Huddersfld. J. W. Robson	350	1·51	10	20·96	27·49	18	1866-83	0·57	26th.
Thorpe, Halifax.— F. G. S. Rawson	365	3·25	18	29·69	—	2	1882-83	1·03	26th.
Tuxford, Notts. — Grammar School, J. N. Dufty.	220	0·64	10	16·01	22·80	8	1876-83	0·21	11th.

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Information is at present specially required on the Slugs (*Testacella*, *Limax*, and *Arion*), of which living specimens from every district are desired.

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WM. DENISON ROEBUCK, F.L.S.,

AND

WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

Contents:

PAGE

On a Megalichthys from the Yorkshire Coalfield—*Prof. L. C. Miall, F.L.S., F.G.S.* 121
(Illustrated).

The Pied Flycatcher in Westmoreland—*Rev. H. A. Macpherson, M.A.* 125

The Marine Shells of Yorkshire—*Rev. W. C. Hey, M.A.* (conclusion) 129

Additions to the Wensleydale Flora:— 134
Notes supplementary to Baker's North Yorkshire—*F. Arnold Lees.*

Notes on Mammalia:— 128
Deep drop for a Weasel—*T. N. Postlethwaite*; Badgers in North Lancashire—*Robert Standen*; Black Rat at Newcastle-on-Tyne—*Dennis Embleton, M.D.*

Ornithological Notes:— 126, 127
Curious site for a Wren's Nest—*S. Chadwick*; Cuckoo laying in a Pollard Willow—*T. N. Postlethwaite*; Albino Birds in Nidderdale—*Wm. Storey*; Water-rail in Nidderdale—*Id.*; Puffin in Notts—*J. Whitaker, F.Z.S.*; Little Auk in Lincolnshire—*E. B. Wrigglesworth*; Little Auk at Settrington, East Yorkshire—*A. W. Walker*; Ornithological Notes from West Yorkshire—*C. C. Hanson.*

Botanical Notes:— 138, 139
Hydnum coralloides in Notts.—*W. Gain;* Additions to the Flora of Northumberland—*Rev. H. E. Fox, M.A.*

Conchological Note:— 139
Shells at Riding Mill-on-Tyne—*John W. Taylor.*

Fungus Foray at Selby 140

Notes and News 142

Rainfall (Yorkshire and Nottinghamshire Stations), for November 1884 144

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BOOKS RECEIVED.

*Nat. Hist. Trans. Northum., Durham, & Newcastle, Vol. 8, pt. 1., 1884. [Society.
*The Naturalists' World, Dec. 1884. [Editor.
*The Yorks. Caves: a three days' trip, 1882.—T. T. Clarke, 18 pp. [Tyneside Club.
*On a Perched Block of Sandstone in Lunedale, &c.—S. Oswald, 8 pp. [Id.
Voyage to Spitzbergen, &c.—Abel Chapman, 21 pp. and 4 plates. [Id.
Presidential Address by Rev. A. M. Norman (on Deep-sea Faunas), 68 pp. [Id.
*Grevillea, a Quarterly Record of Cryptogamic Botany, Dec. 1884. [Editor.
Revue Bryologique (Edited by T. Husnot), 1884, No. 6. [Editor.
Scottish Naturalist, edited by Prof. Trail, Oct. 1884. [Editor.
Illustrated Science Monthly, Dec. 1884. [The Publisher.
*Local Notes for Science Students. Geology—Osmund W. Jeffs, 1884. [The Author.
*Botanical Record Club—Report for the year 1883. [The Club.
Systematic List of the Butterflies of Europe, by H. C. Lang, 1884, 4to., pp. 6. [L. Reeve & Co.
*Hobkirk's Synopsis of the British Mosses—Second Edition, 1884, pp. 240. [L. Reeve & Co.

Memoirs marked * will be noticed in our Annual Bibliography of the Literature of the Physical Features and Natural History of the North of England.

EXCHANGES.

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Mosses Wanted.—*Hookeria lœte-virens*, *Epipterygium tozeri*, *Myurium hebridarum;* offered in exchange, *Hypnum callichroum* from Loch Laggan, and *Hypnum crista-castrensis*, both in fruit; also *Dieranum fulvellum.*—Mrs. Farquharson, Haughton, Alford, N.B.

Wanted.—Yorkshire Naturalists' Recorder, 1872-1873. Offered for it, Naturalist, vol. 5, or cash.—Editors of the Naturalist, Park Row, Leeds.

Exchange.—Naturalist, bound in one, as good as new, Vols. 3 and 4, 1877-8, 1878-9 (Hobkirk & Porritt's series), for disposal; will take other works in exchange, notably Dr. Taylor's 'Sagacity and Morality of Plants.'—Tom Duckworth, 2, Dacre Street, Carlisle.

W. Eagle Clarke, Del. ad Nat.

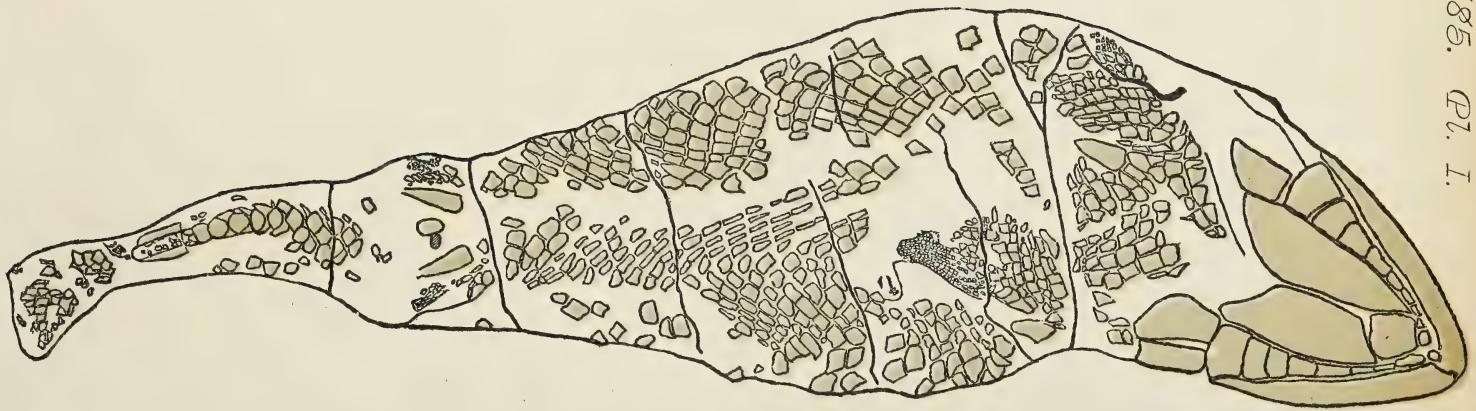

Fig. 1.—Specimen of Megalichthys Hibberti in the Leeds Museum, seen from beneath (one-sixth natural size).

ON A MEGALICHTHYS FROM THE YORKSHIRE COALFIELD.

By L. C. MIALL, F.L.S., F.G.S.,

Professor of Biology at the Yorkshire College, Leeds.

The genus Megalichthys, of which fragmentary remains are common in coal shale, was first named by Agassiz from a fine skull which he found in the Leeds Museum, and from less perfect specimens collected by Dr. Hibbert at Burdiehouse. Subsequent discoveries brought to light various details of structure, and the zoological position of this Ganoid fish has gradually been elucidated with sufficient exactness. Among the most instructive specimens are those procured by Mr. John Ward of Longton, which form part of his magnificent collection. The completest and best preserved of all the known examples of Megalichthys is, however, the fine fossil added last year to the Leeds Museum. It was discovered at Mr. F. B. Ellison's colliery, near Idle, in the roof of the Halifax Hard Bed, and was extracted in a singularly perfect state by the pit manager, Mr. Andrew Oldroyd. By Mr. Ellison's generous gift the fossil became the property of the Leeds Philosophical Society. It measures 3 feet 8 inches in length, of which the head includes about 10 inches, and the tail (which is imperfect) about a foot. The full length of such a fish as yielded the large skull figured by Agassiz would be 4 or 5 feet.

Plate 1 shows the general proportions of the fish. At the head end is seen the lower jaw, and enclosed by it the jugular plates which defended the floor of the mouth. Further back, the small scales which invest the pectoral fins are visible. Regularly disposed lozenges of glittering enamel cover the rest of the under surface. At the root of the tail are three large scales, which may be termed the pelvic scales, and outside these are the remains of the ventral fins. The anal fin is quite distinct, and unusually far back. The structure of the paired fins, to which much importance is attached by systematists, has not been hitherto clearly made out. It appears that a pair of large basal scales or fulcra support the base of each fin, that a row of smaller scales lies along the inner border, and a shorter row along the outer border; lastly, that the space between these two rows is occupied by a crowd of very small scales. The large scales no doubt invested the more rigid, and the small scales the more flexible parts of the fin, and we thus gain some insight into the structure of the underlying skeleton, of which no trace is preserved. The fins of

Megalichthys must have resembled those of recent Sharks and Rays (see fig. 5), while they were quite unlike those of nearly all surviving Ganoids.

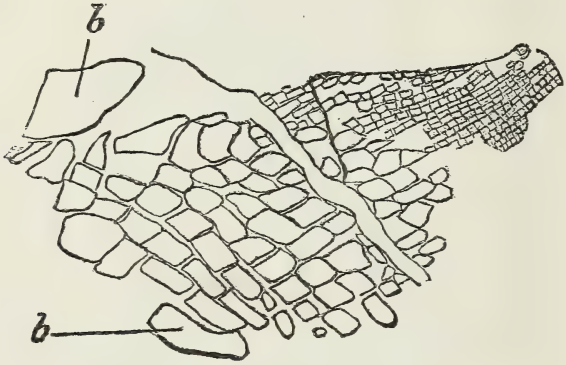

Fig. 2.—Left Pectoral Fin of Megalichthys Hibberti. (One-half natural size).

b, *b*. Basal scales or fulcra.

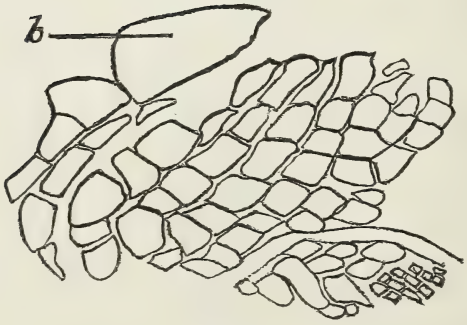

Fig 3.—Right Pectoral Fin of Megalichthys Hibberti. (One-half natural size).

b. Basal scale.

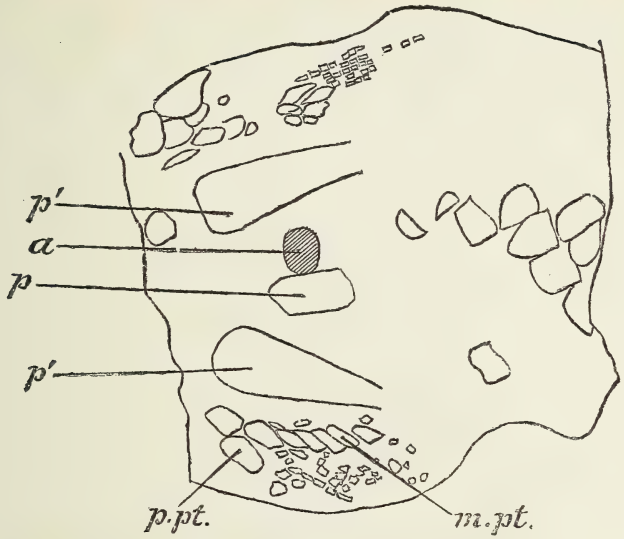

Fig. 4.—Ventral fins and pelvic scales of Megalichthys Hibberti (One-half natural size).

p.pt. Propterygium.
p. Median pelvic scale.
a. Anus.
m.pt. Metapterygium.
p', *p'*. Lateral pelvic scales.

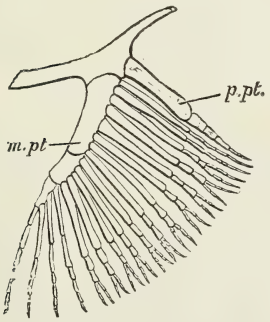

Fig. 5.—Ventral fin of Torpedo.

m.pt. Metapterygium.
p.pt. Propterygium.

Some further anatomical details, of interest only to special students, are to be found in the description published in the Quarterly Journal of the Geological Society for August, 1884 (xl., 347–352) from which, by permission of the Society, the figures here reproduced have been taken.

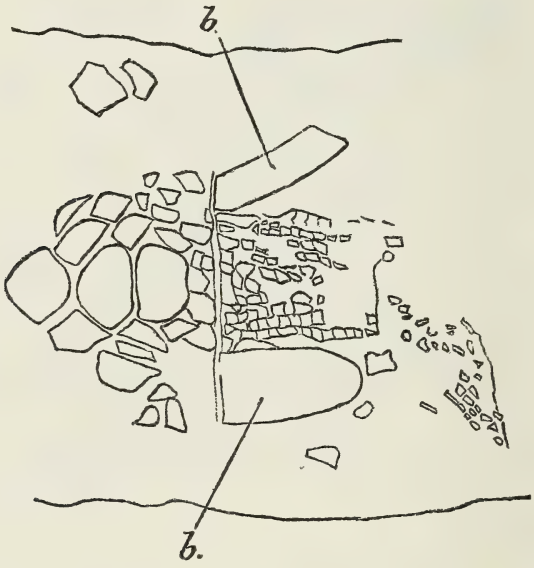

Fig. 6.—Anal fin of Megalichthys Hibberti, the very convex surface represented as plane (one-half natural size).

b, *b*. Basal scales.

Other specimens of Megalichthys, and in particular the fine skull previously obtained for the Leeds Museum, yield full information respecting the outward form and component bones of the skull. It is further known that the teeth were unequal, very large teeth occurring at regular intervals in the rows of small teeth which beset the jaws. Two patches of small teeth occupied the roof of the mouth. The vertebræ were incompletely ossified, and in the fossil state form rings of bone with attached processes, the central part having been cartilaginous and incapable of preservation.

THE PIED FLYCATCHER IN WESTMORELAND.

By the Rev. H. A. MACPHERSON, M.A.,
Carlisle.

Early on May 19th, 1884, we started to search for Pied Flycatchers at Lowther Castle, where my companion, Mr. W. Duckworth, had observed them during many previous summers. In this locality these Flycatchers are usually to be found near the water; nevertheless, on this occasion, we had hardly entered the Park when a beautiful little male caught my eye; a moment later Mr. Duckworth spied its less obtrusive mate. A second pair were flitting in and out of some shrubberies, while a few hundred yards from the Castle a female was clinging to the entrance of her nesting hole. In a minute or two she popped inside, dislodging the male, which almost at the same moment quitted the nest by an upper orifice. When we reached the Eamont's hanging banks, the charming song of this species resounded on all sides. We watched another female conveying a leaf to her nest.

Most of the males were singing in the upper branches of oaks that grow beside the river; occasionally they darted down to pluck an insect from the grass. The movements of these individuals seemed to be more active and lightsome than those of the Pied Flycatchers that I have seen in Switzerland in August and September; but the latter were chiefly young birds. At Lowther the males seemed to be chiefly adult birds, but we noticed some males of the previous year in full song. Having previously obtained leave to shoot a few for the Carlisle Museum, we obtained an adult female and four males, one of which I sent to the British Museum.

Three of the males were mature, but one was not; this bird bore considerable resemblance to a female, from which it differed chiefly in the white of the forehead, in having black upper tail coverts and black wing coverts. As we rambled along the water side, ever and anon a male Pied Flycatcher would dart out of the woods on either side, as though to dart across the stream, but checking in midstream would poise himself for rest upon the summit of a grey rock in the river's bed.

Occasionally we observed a female resting pensively in the cool shade, but the nymphs seemed less energetic than their suitors, especially as the heat increased towards noon. The most careful use of two pairs of glasses failed to detect a single White-collared Flycatcher, though the number of birds examined during the day was very large. We bade farewell to the Flycatchers only when we quitted the Park; but as we approached the borders of Cumberland their

numbers had steadily decreased. It was on June 14th that I introduced my friend Mr. Earle, of Oxford, an enthusiastic oologist, to the woods of Lowther; the nest which we had seen so near the castle had been torn out; and it was only on reaching the water side that I could point out a pair of Pied Flycatchers to my comrade-in-arms. Their merry song, which I should consider a melodious development of that of *Parus major*, no longer resounded on all sides; in fact, a large number of those seen on May 19th had not stopped to nest at Lowther, but passed on, as is their wont, by this route into Cumberland. Only three females were visible, the majority probably being sitting. A single male in the feminine garb of the first year chanted snatches overhead; presently, as we leant against some rails above the pleasant flood of the Eamont, a fine male took up his position some twenty yards in a straight line from us, on a level with our eyes. There he sang constantly for ten minutes, and though he fidgeted a little and slightly altered his position, he was never obscured from view. Turned three parts towards us, it was delightful to study the vibrations of the silvery white throat, the mandibles wide expanded, the tail swaying with emotion.

Before leaving Lowther we spent some time in watching some male Flycatchers 'on the feed'; taking up their position at the extremity of a bough, a dead one by preference, ten or fifteen feet from the ground, they gazed intently into the grass beneath, craning their necks eagerly if they fancied that an insect stirred, and then dropping down to mother earth to secure the victim. They made a number of ineffectual descents in this way, but we repeatedly saw them fly up from the ground with an insect in the bill, and dart away through the trees nearly in a straight line, presumably to their nests. Not unfrequently they clung to the tree trunk in the manner of a Tree Creeper; indeed the Pied Flycatcher is almost as much at home in this attitude as when perching, like the Spotted Flycatcher, across a bough.

ORNITHOLOGICAL NOTES.

Curious Site for a Wren's Nest.—A few days ago the station-master at Rillington station showed me a Wren's nest ensconced in one of three little holes in the ash-pit at the back of his house. The ash-pit was about four feet square, and on one side of it, about half way up the wall, three little holes about three inches square had been made into the bricks for some purpose. The little birds first took up their abode in this place about five years ago, and had now become very familiar and sociable. In 1882 the station-master fed them, and in 1883 they brought off no less than three broods of young. In 1884 only two lots were brought off. He had not noticed the quantity of eggs in each clutch; he had been principally interested in the old ones, which soon became to be considered family pets, running about the door like two little mice. They live in the old nest all winter, and in the spring build in the adjoining compartment, and so on, changing about from year to year.—S. CHADWICK, Norton, Malton, December 5th, 1884.

Naturalist,

Cuckoo Laying in a Pollard Willow.—Some few years ago I saw a young Cuckoo taken from a hole in a pollard willow in Lincolnshire. The willows being much frequented both by House and Tree Sparrows for nesting purposes, I was unable to determine certainly which of these birds was the foster-parent. The nest was so situated that it appeared doubtful if the parent Cuckoo could have laid her egg *in* it. At that time, these willows, which were close to the city of Lincoln, were quite a stronghold for Tree Sparrows. They have now, I believe, been felled.—T. N. POSTLETHWAITE, Hallthwaites, Millom, Cumberland, December 8th, 1884.

Albino Birds in Nidderdale.—Whilst walking near Dacre Banks on August 31st, I was struck by a noise which I heard, and on turning round I noticed a flock of Swallows, and amongst them a white one, which appeared to suffer attack from the rest. The swallow passed and re-passed, so that I had a good opportunity of watching it; this was also seen by many others, so that I can vouch for the above statement.

Also, during the summer of 1882, a pair of white Swallows appeared in the same place, and there remained for three or four weeks. I regret to say one was shot and the other disappeared.

During the past spring a white Starling built a nest in a quarry in Pateley Bridge, which shortly disappeared, probably having been shot.—WM. STOREY, Pateley Bridge, September 10th, 1884.

Water-rail in Nidderdale.—On Thursday, October 30th, I had sent me, by the Hon. H. E. Butler, a Water-rail (*Rallus aquaticus*) which had been shot on Hardcastle Moor by Mr. T. E. Yorke. This is, as far as I am able to ascertain, only the second occurrence of this bird in Nidderdale, one having been taken a few days previously at Bewerley. The one shot by the latter gentleman is about to be added to his collection.—W. STOREY, Pateley Bridge, via Leeds, November 12th, 1884.

Puffin in Notts.—Miss Webb of Mansfield Woodhouse, picked up on the 12th of November, near the village, one of these birds alive on the road; it had been driven in by the storm of the previous day. As this is the first occurrence of this sea-loving bird in this county, it will form a great addition to my Notts birds.—J. WHITAKER, Rainworth Lodge, Notts, November 20th, 1884.

Little Auk in Lincolnshire.—On the 22nd November I received a remarkably fine specimen of the Little Auk (*Mergulus alle*) from near Boston. The bird was in poor condition, though excellent in plumage.—E. B. WRIGGLESWORTH, 1, Lawefield Terrace, Wakefield, December 17th, 1884.

Little Auk at Settrington, East Yorkshire.—A short time ago (say the latter end of November), after a stiffish westerly gale, a fine mature male specimen, in splendid plumage, of the Rotche or Little Auk (*Uria minor*), was brought to me alive, having been picked up in the garden at Westfield, Settrington, over twenty miles from the coast as the crow flies. I believe these birds seldom leave the deep water except at special periods, such as breeding time, &c., and are but rarely met with except out at sea.—A. W. WALKER, York and East Riding Bank, Malton, December 8th, 1884.

Ornithological Notes from West Yorkshire.—A Little Auk (*Mergulus alle*) was picked up in an exhausted state at Outlane, near Stainland, on the 21st of November.

A male Gray Shrike (*Lanius excubitor*) was shot at Wike, near Brighouse, November 22nd.

Three Red-breasted Mergansers (*Mergus serrator*) were shot near Kirkheaton, December 2nd.—C. C. HANSON, Greetland, December 16th, 1884.

Deep drop for a Weasel.—Last September, whilst partridge shooting in Cumberland, I saw a Weasel jump from the top of a limestone pit into some water, a distance of thirty or forty feet, and then swim across the pool.—T. N. Postlethwaite, Hallthwaites, Millom, Cumberland, December 8th, 1884.

Badgers in North Lancashire.—In May last the sons of Mr. O. Hayhurst, of Whittingham, about five miles from Preston, observed the tracks of a large animal, which they supposed to be of a fox, in a dense and secluded wood called the Cockshoots, adjoining his farm. On following up this track a large burrow was discovered in the wood, and a strong steel trap being set, the following morning they were greatly surprised to find caught in it an animal with which they were totally unacquainted. They took it to an old farmer living near, and he at once pronounced it to be a young Badger. It weighed about eight pounds, and was dead when found. A few days afterwards another one was pulled out of the hole by a dog, and a week later a systematic hunt was organised, resulting in the capture of two others. One was killed by the dogs, but the other was rescued from them before being much injured. This was kept alive for over a month, and became very tame, although savage at first. Unfortunately, whilst it was being examined by one of the numerous visitors who went to see it, he accidentally or otherwise let it fall to the floor, and it was so injured that it died the day following. A full-grown one—most likely the parent of those captured—was seen a few weeks ago, but it has hitherto escaped capture.

The occurrence of Badgers in this locality is interesting, as they are now very seldom met with. This instance of the occurrence of the Badger in Lancashire will probably interest some readers, and I think it highly probable that this particular family may have migrated from a considerable distance in search of a more suitable abode, and personally I feel very sorry that they should have been molested.—R. Standen, Goosnargh, near Preston, Lancashire, November 19th, 1884.

Black Rat at Newcastle.—In No. 112 is a note on the subject of the Black Rat by Mr. Southwell; Mr. Gurney's specimen therein noticed must have been from Gateshead, though it is quite probable that it had migrated from Newcastle, or had escaped from some ship. The Black Rat has not been recorded as occurring in this town, because probably it has not been sought for. A paper on 'The two species of Rat in England' was read in 1850 (see Vol. ii., Trans. Tynes. Nat. Field Club), and the specimen therein described was from Stockton-on-Tees. We now know that the Black Rat exists in some old premises in the Close, a narrow street in Newcastle-upon-Tyne, by the river side, above the bridge, where it appears to have been for some time, and that it has been seen at times on board ships lying at the Quay, and there is therefore great likelihood of its existing in most seaport towns, for like its brown congener, it is a wanderer. It has been found in London, Plymouth, Stockton, Newcastle, and Gateshead, and also in the United States (see an article in *Nature*, April 24th, 1879, in which it is shown that the Black was superseded by the Brown Rat in the States in very much the same way as occurred in England). In the magnificent new Museum of Natural History in this city—which we owe to the energy and skill of our distinguished naturalist, Mr. John Hancock—are two cases, each containing two prepared skins of the Black Rat, brought alive in the year 1864 or 1865, with others, by Mr. J. H. Richardson from Plymouth. From all these four specimens the black colour has disappeared, owing, probably, to the influence of light, and they are now nearly all over of a brown colour like that of *Mus decumanus*; one, however, is distinctly piebald—brown and drab on the head and neck. They are still distinguishable from the Brown Rat by their smaller size and longer hair. Mr. Wright, custodian of the Natural History Museum when on the former site, had a few of the above Black Rats in a cage. They now and then got out and ran about the place, and the morning after were found in the cage again, having escaped from the rude attentions of their brown cousins, as it was believed, which were too wary to follow them into the cage, fearing a snare or trap. They eventually disappeared altogether. The sex of Mr. Southwell's specimen is not mentioned, but it was smaller than that described in the paper first above mentioned. Is the female Black Rat bigger than the male?—D. Embleton, M.D., 4, Eldon Square, Newcastle-on-Tyne, November 18th, 1884.

Naturalist,

THE MARINE SHELLS OF YORKSHIRE.

By the Rev. W. C. HEY, M.A.,

St. Olave's Vicarage, York; *President of the Conchological Section of the Yorkshire Naturalists' Union.*

(Continued from page 31.)

DENTALIIDÆ.

Dentalium entalis L.

Redcar and Scarborough. A deep water shell; only rarely found on the beach.

CHITONIDÆ.

Chiton marginatus Penn.

Adhering to loose stones, or to rocks, between tide marks. Common at Scarborough, Redcar, Filey, &c. Very variable in colour; pink specimens often occur at Scarborough.

Chiton cinereus L.

I have dredged this species in a few fathoms water off Cayton Bay.

Chiton Hanleyi Bean.

Scarborough (Bean).

Chiton marmoreus Fab.

Bean obtained this species at Scarborough.

Chiton fascicularis L. Redcar.

PATELLIDÆ.

Patella vulgata L.

Everywhere where the coast is rocky, both on flat scars and steep cliffs, as at Flamborough Head. In such localities as the last named, it is generally dwarfed, and very coarsely ribbed. I have a very dark and finely striated form from Skinningrove. Limpets are commonly designated on this coast 'flithers,' and are largely collected for bait.

Helcion pellucidum L.

Adhering to the leaves of *Laminaria digitata* at dead low-water mark. Very abundant on Filey Brig. Also at Redcar, Bay Town, and Scarborough.

Var. lævis Penn.

Fine on West Scar, Redcar.

Acmæa testudinalis Müll.

Unusually abundant on the Lias Scars below Huntcliff. Not uncommon on the Redcar Scars and the south shore at Scarborough. In all these localities the specimens show the most varied markings.

Acmæa virginea Müll.

Abundant and fine near White Nab, Scarborough. The specimens must be sought for under stones at spring tide low-water mark. Also at Redcar.

FISSURELLIDÆ.

Fissurella reticulata Don.

Has been recorded from Redcar (Ferguson).

CAPULIDÆ.

Capulus Hungaricus L.

I have met with this shell in no Yorkshire locality but Redcar, and only once there.

TROCHIDÆ.

Trochus helicinus Fab.

Dead low-water mark at White Nab, Scarborough.

Trochus tumidus Mont.

I have dredged this species in a few fathoms water in Bridlington Bay.

Trochus cinerarius L.

In shallow pools and under loose stones between tide marks. Common and general—*e.g.*, at Saltburn, Filey, Flamborough.

Trochus zizyphinus L.

Scarce. Sometimes cast up on Redcar sands. Has been found living on Salt Scar.

LITTORINIDÆ.

Lacuna vincta Mont.

A common species near low-water mark on all our rocky coasts. It may be obtained in quantities by cutting a handful of Fucus, and steeping it in fresh water, when the shells sink to the bottom of the vessel. I have it from Scarborough, Filey, and Saltburn.

Lacuna pallidula Da Costa.

On seaweed between tide marks. Fairly abundant at Scarborough, Filey, and Saltburn.

Littorina littoralis L.

Very general on flat rocks anywhere below high-water mark—Saltburn, Scarborough, &c. The commonest form is olive, with a purple-stained lip. A brown form with darker reticulations is also frequent.

Littorina neritoides L.

In crannies of the rock on Filey Brig, where it rises just above high-water mark.

Littorina rudis Maton.

General between tide marks—Robin Hood's Bay, Redcar, &c. A very handsome banded form occurs on rocks just below Bay Town. Fine yellow specimens near Danes' Dyke.

Littorina saxatilis Johnston.

This little species swarms where there are crannied rocks just above high-water mark. Localities for it are the rocks which lie at the foot of Scarborough Castle Hill, Cliffs south of the Spa, Whitby East Cliff, The Peak, Filey Brig.

Littorina littorea L.

Common on all scars, and profusely abundant in Robin Hood's Bay. A bright scarlet form occurs here with the ordinary one.

Rissoa parva Da Costa.

Very abundant at low-water mark at Scarborough, Filey, &c.

Rissoa striata Adams.

Redcar—plentiful.

Rissoa cingillus Mont.

Redcar—scarce.

Hydrobia ulvæ Penn.

Positively swarms on the slag breakwaters at the mouth of the Tees, and among the muddy pools. Also at Spurn Point.

SKENEIDÆ.

Skenea planorbis Fab.

I have taken a few specimens at Scarborough on the rocks south of the Spa.

TURRITELLIDÆ.

Turritella terebra L.

Frequent at Redcar; sometimes cast up in very large numbers.

Var. nivea Jeff.

Occasionally found at Redcar.

SCALARIIDÆ.

Scalaria Trevelyana Leach.

I have several times met with this scarce shell on Redcar beach.

Scalaria grænlandica Chemn.

A specimen has been shown me which was picked up at Bridlington on the sands. Can it have been derived from the Bridlington Crag?

EULIMIDÆ.

Eulima polita L.

Scarborough—a fine series of local specimens in the Museum.

NATICIDÆ.

Natica monilifera Lam.

Often thrown up alive on the beach between Redcar and Tees mouth.

Natica Alderi Forbes.

I once met with a quantity of this species in the bottom of a fishing boat at Redcar.

VELUTINIDÆ.

Velutina lævigata Penn.

Scarborough.

APORRHAIDÆ.

Aporrhais pes-pelecani L.

Redcar—not a common shell.

BUCCINIDÆ.

Purpura lapillus L.

Very abundant on all our rocks between tide marks. The specimens seldom have the bands which so frequently decorate this shell in south-western localities, though the whole shell is often yellow and even bright orange in colour. Perhaps the finest specimens are from the south shore, Scarborough. Banded shells occur at Huntcliff.

Buccinum undatum L.

Very common, the young shells being found in pools near low-water mark, and the adult brought in in great abundance on the fishing lines, attached to the bait.

The reversed form has been taken at Bridlington.

Buccinopsis Dalei J. Sow.

In York Museum there is a specimen labelled 'Runswick Bay.'

MURICIDÆ.

Murex erinaceus L.

Flamborough Head—not uncommon, but I never took it alive.

Trophon truncatus Ström.

A deep-water species, not uncommon off Bridlington. It is a very favourite tenement of the hermit crab.

Fusus antiquus L.

Very common in deepish water. I have taken numbers from the fishing lines at Redcar, Scarborough, and Bridlington. Specimens from Redcar are the largest, and show particularly beautiful shades of yellow and pink in the interior of the shell. I have one such shell more than six inches in length. The normal dimensions are 3·25 (Jeffreys).

Fusus Norvegicus Chemn.

From deep water at Redcar (Ferguson) and Scarborough (Bean).

Fusus Turtoni Bean.

Whitby Museum contains Scarborough specimens. It is one of the Dogger Bank rarities.

Fusus gracilis Da Costa.

Frequently brought in on the fishing lines. I have taken it at Redcar and Scarborough, but much more abundantly at Flamborough and Bridlington.

Fusus propinquus Alder.

Scarborough—scarce.

Fusus Berniciensis King.

Scarborough specimens are in York Museum.

NASSIDÆ.

Nassa reticulata L.

Strange to say, I have never met with more than a few dead specimens of this common shell. They occurred at Redcar.

Nassa incrassata Ström.

Frequent in pools and under stones near low-water mark at Scarborough, Redcar, &c.

PLEUROTOMIDÆ.

Pleurotoma turricula Mont.

Dredged off Bridlington rather plentifully.

Pleurotoma rufa Mont.

Redcar—among seacoal, &c., on the beach.

CYPRÆIDÆ.

Cypræa Europæa Mont.

Dead shells are very abundant on almost all our beaches, but the only littoral locality I know for the live animal is Salt Scar.

BULLIDÆ.

Utriculus truncatulus Brug.

Redcar beach; Scarborough, south shore, at low-water mark.

Cylichna cylindracea Penn.

Redcar—not common. Scarborough.

Actæon tornatilis L.

Not uncommon at Redcar and Scarborough.

CARYCHIIDÆ.

Melampus bidentatus Mont.

Sandhills at Coatham—scarce.

Melampus Myosotis Drap.

Is said to have abounded at Coatham some years ago, but I cannot find it now.

ADDITIONS TO THE WENSLEYDALE FLORA:

Notes Supplementary to Baker's 'North Yorkshire.'

By F. ARNOLD LEES,

Gayle, near Hawes; *Recorder to the Botanical Record Club.*

FIRST LIST—PHÆNOGAMS AND VASCULARES.

Since the issue of the circular for the Hawes meeting of the Yorkshire Naturalists' Union, Mr. John Percival, of Carperby, and myself have made several not unimportant additions to the florula of Wensleydale (chiefly west of Aysgarth), as registered in Baker's 'North Yorkshire,' for his drainage district No. 7—Yoredale. As no more can be made this season, so far as the flowering plants are concerned, a brief record of the supplementary facts will be interesting. The additions to the Mosses, Hepatics, and Lichens will be given in a second list later on.

The twenty-nine following species stand quite unrecorded for Yoredale. Two others 'reported,' but ranked as doubtful in the work named, I have ascertained to really occur without any doubt. The mark of exclamation (!) after the station signifies that I have verified the name and locality by personal observation, where the discovery has not been my own in the first instance. The letters *H.* and *L.* indicate respectively Higher and Lower Yoredale, the former division lying to the west and the latter to the east of a line drawn across the dale from the summit of Addlebrough to the highest point of Woodhall Moor above Nappa Scar.

1 **Nasturtium palustre** D.C. (**N. terrestre** Sm.) *L.*

By a plash in process of draining at the west end of Carperby; J.P. !

2 **Sagina ciliata** Fr. *L.*

New to the vice-county (65) of N.W. York. I found this recently on the bare ground in the Leyburn flagstone quarries, growing with the long-known *Alsine tenuifolia.*

3 **Agrimonia odorata** Mill. *L.*

Found by Mr. J. Percival on the slope of Penhill, above West Burton. Also a new vice-county record. Not recorded for North Yorkshire at all in Baker's Flora of 1863; but since that gathered by him in the north-east half of the area (v.c. 62) since in *Top. Bot.* that vice-county is entered for it on the authority of 'Baker *spn.*' This seems at best but a sub-species of *A. eupatoria*, the shallower furrowing and greater rotundity of the calyx-tube being morphologically explained by the development of *two* carpels in the ovary instead of one.

4 **Rosa micrantha** Sm. *L.*

A bush or two only, among hollies in Bear Park, Aysgarth; first noticed by myself on September 5th. !

5 **Myriophyllum alterniflorum** D.C. *H.*

In the river Yore, below Hawes Bridge, 800 ft. alt. ! In Summer Lodge Tarn, Askrigg Moor, 1,500 ft. alt. ! Mr. Baker omits drainage district 7 in outlining its area in North Yorkshire, and remarks that it is 'the rarest of the three species'—the very opposite of my experience among the hills. With us *M. verticillatum* is unknown, and *it* is most abundant incomparably in the low 'carr' country; whilst *M. alterniflorum* ascends to Malham Tarn (1,250 ft.) in West Yorkshire, and to 1,500 ft. in this district.

6 **Pastinaca sativa** L. *H.*

Sparingly on low scars at Shaw Cote, west of Askrigg. Alt. 250 yards.

7 **Galium uliginosum** L. *L.*

Rough marshy ground south-west side of Locker Tarn, above Carperby.

8 **Crepis hieracioides** W. & K. (**C. succisæfolia** T.) *H.*

Among bushes on the west slope of Bain Gill, before the Semerdale pastures are reached; J.P. !

9 **Hieracium amplexicaule** L. *

On old garden walls at Gayle, West End; apparently quite naturalised. One plant on rocks in fields near Burtersett; and one plant found on a bridge over a beck below West Burton, by Mr. J. Percival. I am at a loss to explain how this can have come, but it appears to have been known to observant Gayle villagers for many years.

10 **Hieracium cæsium** Angl. Auct.; var. **Smithii** Baker. (*Vide* Journ. Bot., N.S., vol. viii., p. 360. 1879.) *L.*

Below Leyburn 'Shawl'; J.P. ! A very glaucous plant, with deep and acute teeth on lower leaves, and main stem-leaf. Typical *cæsium*, less robust than the foregoing, on Penhill and by Gayle beck !

11 **Linaria ochroleuca** Bréb. (**L. sepium** All.? **L. italica** Angl. Auct.) *L.*

With yellowish-white, not lilac-striped flowers, growing near *Sambucus ebulus* L.—the Dane-wort—on a shaly escarpment of flagstone, planted with larches, and over-run with thoroughly-naturalised *Sedum album*, to the north side of and parallel with the eastern third of Leyburn 'shawl.' This is usually considered

a hybrid between *L. vulgaris* and *L. striata*; but seeing that it perfects seeds here, and that *L. striata* does not appear to occur in the district, it is perhaps true *italica* Trev., and, if so, must have been introduced with the *Sedums*, &c. It is possible that all three are alike only *denizens*, although there seems no reason why it should here be relegated to the alien category solely because some of its associates are suspicious. Other native species it would be folly to suspect, grow in the same plantation, such as *Hieracium cæsium* and *Asplenium Adiantum-nigrum*, neither of which one ought to account planted, although they are in danger of being choked out by *Sedum rupestre*, *album*, and *oppositifolium*, *Cotoneaster microphylla* and *Hypericum calycinum*.

12 **Melampyrum sylvaticum** L. *H.*

West bank of Whitfell Gill, above the main Force; J.P. !

13 **Utricularia minor** L. *L.*

Very wet, peaty spot on Thornton Rust Moor, North-east of Addlebrough Crags, Wensleydale, N. W. Yorks; alt. 1,400 feet; J. P. Quite a new station, far away from, and at a much greater altitude than any of the other Yorkshire ones, which are on the low peat mosses.

14 **Trientalis europæa** L. *H.*

Plentiful in Widdale Car Plantation, south end, west side of Widdale.

15 **Plantago intermedia** Gilib. *H.*

Stony ground, by roadside near Tarney Force, Lower Widdale.

16 **Populus tremula** L. *H. L.*

Little gully, west of Spen House, Skellgill. Semerwater side. North bank of Yore, Bear Park. All these are type *villosa*, with downy young leaves.

17 **Juniperus communis** L. *L.*

Very sparingly on a low stony ridge, on the moor above Carperby; but on the Wensleydale slope, as Mr. J. Percival informs me. On the steep, clayey slope of the bank of *drift*, north side of R. Yore, near Askrigg Station, accidentally discovered by me late in October.

18 **Potamogeton rufescens** Schrad. *L.*

In a pool at Strands, between Bear Park and Woodhall; J. Percival !

19 **Alisma natans** L. *H.*

In Semerwater, 'near the Church end,' July 1866. I quote from the label of the specimen I gathered (from a boat) when living at High Blean. I was not able to re-gather it last year from inability to obtain a boat. Baker gives a station in the

central valley (drainage district 8), the elevation of which is 200 yards less than Semerwater.

20 **Heleocharis acicularis** Sm. *H.*

South and south-east end of Semerwater, in sandy, peaty ground amid the *Equisetum*! In plenty; perhaps not previously observed here, because in any but such a dry season as that of 1884, the spot would be unapproachable on foot.

21 **Carex involuta** Bab. *H.*

Amid bushes bordering the 'Backwater' marsh (old bed of river Yore) just below Hawes! A distinct-looking plant, intermediate in most respects between *ampullacea* and *vesicaria*: perhaps a hybrid.

22 **Polypodium calcareum** Sm. *H. L.*

By the Gayle Beck, above the force of Aisgill. Also shown to me by Mr. Percival on Thackthwaite limestone scars. Although unrecorded for vice-county 65 in both editions of 'Topographical Botany'; and omitted in the species enumeration of 'North Yorkshire' (p. 311); yet it is given on page 127 in the body of the latter work amongst other names of plants found on the crags of Waldendale and Bishopdale! It is very curious that it should have thus dropped out of notice (as if it were, or had been considered an error) for twenty-five years; and then have been independently re-found in two new stations, wide apart and miles from the old one, by Mr. Percival and myself; showing conclusively how greatly (compared with Teesdale) Wensleydale botany has been neglected for well-nigh a quarter of a century.

23 **Equisetum variegatum** Schleich. *H. L.*

On the wet, rocky east bank of the Bain, above Bainbridge, June 1884, in some plenty, but rather dwarfish. After noting this, I turned to 'North Yorkshire' (p. 314), and then found there was a previous report (held doubtful by Baker, for the drainage district No. 7 is omitted under 'Area') of its having occurred by the Yore side at Aysgarth Force. To clear the matter up, Mr. Percival and myself made speedy search there, with the result that we soon found it, in plenty and luxuriant, growing with *Scirpus pauciflorus* in wet, stony ground, on the north bank of the river near the 'middle' falls!

24 **Nitella opaca** Ag. *L.*

Mingled with confervæ at the roots of *Potamogeton oblongifolius*, by the north bank of Yore, Bear Park; J.P.! Bishopdale!

25 **Chara fragilis** Desv. *H. L.*

In the river Yore, 500 yards below the bridge at Hawes!

26 **Chara vulgaris** L. *H. L.*

Rill, Mossdale. Rill above Carperby; J.P. ! Rills running into Locker Tarn; J.P. ! Rills on Yore bank, at Aysgarth Force; J.P. !

27 **Chara contraria** A. Braun. *L.*

Rillet or pool on Yore bank, Aysgarth (*teste* A. Bennett *in litt. ad* J.P.).

28 **Chara hispida** L. *L.*

Stream above keeper's hut by, and also in Locker tarn !

29 **Chara aspera** Willd. *L.*

Little pool in course of rivulet on north bank of Yore, below the bridge at Aysgarth; J.P. !

All the Garlics except *Allium ursinum* still remain unregistered for Higher Wensleydale, unless the western summit scar of Addlebrough comes within the district. *A. vineale* occurs in plenty on this scar; alt. 1,550 feet. *A. oleraceum*, *A. scorodoprasum*, and *A. vineale* have all been found about Carperby and Aysgarth by Mr. Percival. *Hieracium dubium* Leers, occurs by the Yore, just below Bainbridge bridge, and lower down at Bear Park, &c., and occurs as high up the dale as Cotterdale Falls, 1,200 feet. *Saxifraga aizoides* L. occurs in abundance upon the wet vertical rocks of Whitfell main Force—a fact 'reported' to Baker in 1860. *Vicia sylvatica* L. grows in Mill Gill, west side, below the Force — a new station; as is also *Ribes petræum* Sm., in a small gill on the east slope of Lower Widdale, a little north of Tarney Force. *Asplenium Adiantum-nigrum* L. is certainly not 'frequent' (*vide* 'North Yorkshire') 'upon rocks and walls,' especially in the more calcareous portion of the dale, but Mr. Percival has shown it to me growing sparingly among *grit* 'tumble' in Thackthwaite.

In conclusion, two or three extensions of altitudinal range beyond those given above or by Baker are worth noting. *Senecio erucæfolius* L. ascends much over 150 yards. It grows in Freeholders' Wood, at Aysgarth, at 650 feet, and below Shaw Cote at 700 feet. *Potamogeton pectinatus* occurs in Semerwater at 700 feet alt., *Myosotis palustris* With. ascends above 200 yards: it grows by the Bain and on the border of Semerwater. *Salix purpurea* L. ascends much beyond Hawes—the limit known to Baker—forming quite a thicket half way up Widdale at 900 feet.

BOTANICAL NOTES.

Hydnum coralloides in Notts.—I have just found three specimens of this very rare fungus at Ossington, growing on felled timber. The largest was fully six inches in diameter. A precisely similar crop, both in regard to number and size, grew on the same log last year.—W. GAIN, Tuxford, Newark, October 20th, 1884.

Naturalist,

Additions to the Flora of Northumberland.—The flora of our two northern counties has been so admirably dealt with by Messrs. J. G. Baker and G. Tate, and the Natural History Societies which have their respective head-quarters on the Tyne and the Tweed have so diligently covered the ground between them that the number of new plant-records can never be very large or important. A month's holiday, however, this year at Bamborough enabled me to make some additions which are of interest. The following plants are not recorded in Mr. Baker's Flora, and as far as I know have not yet been reported for the county of Northumberland.

Arenaria serpyllifolia L., a form of the Thyme-leaved Sand Wort, stouter and more glandular than the type, and with more swollen capsules, seems to be identical with the Isle of Wight *A. Lloydii* Jord. It occurred on the sand-hills south of Bamborough Castle, but as I did not recognise these features particularly at the time, I gathered only a single specimen; I have little doubt, however, that it was plentiful.

Besides the well known rarity *Psamma baltica* R. & S. (which was flowering very scantily this year), the Ross links produced abundantly in damp hollows *Centunculus minimus* L., together with *Radiola millegrana* Sm., the latter of which, though also unreported by Mr. Baker, has I believe been observed elsewhere in the county by local botanists. In the same locality, but on drier soil, I was surprised to come across a few plants of *Viola Curtisii* Forst.; hitherto, if I am not mistaken, reported only from the Lancashire sand-hills, and other spots on the West Coast. There was only a small quantity of it and that had suffered by the ravages of the rabbits, whose unfortunate reproductiveness is fatal to the survival of anything but the toughest of heather or the wiriest of sea grass. The stoloniferous root-stock and somewhat scabrid peduncle seem to leave little doubt as to its identity.

The most interesting discovery was that of *Corallorhiza innata* Brown, in a boggy wood in Cheviotland which perhaps I had better not describe more particularly. There were several hundred plants of this curious orchid growing with a vigour and profusion which I have not seen equalled even in Switzerland; where I have gathered it in sub-alpine woods along with *Epipogium aphyllum* Sw., *Listera cordata* Br., and *Neottia nidus-avis* L. I believe this is the first time that the Coral-root has turned up on the English side of the border, though I hear from Dr. Maclagan, of Berwick, that a single specimen has since been gathered on Alnwater.

Fumaria confusa Jord., which occurred in company with *F. micrantha* Lag. on Holy Island, is perhaps included under Mr. Baker's *F. capreolata* L., though not noted by him, as are the other sub-species *F. borœi* Jord. and *F. pallidiflora* Jord., for the former of which Bamborough may be added as a station.

Mentha gentilis L., only reported in the flora from Cleadon (? in Durham), possibly included in his *M. sativa* L., grows by the mill pond at Easington, near Belford.

I will not trouble your readers with the other interesting and rare plants of the neighbourhood, the localities of which are well known, and most of which I was able to verify. I am afraid, however, *Asperugo procumbens* L. has disappeared from Bamborough Castle, and *Statice limonium* L. only just exists, and no more, on St. Cuthbert's Island, to be carefully watched and guarded, I hope, by the good Vicar of Holy Island, whose house is hard by. The following plants, also unrecorded in the Northumberland flora, are probably introduced, and very likely have been noted by local botanists:—*Melilotus arvensis* Wallr. and *Rumex maritimus* L., growing with both of the well-marked forms of *Chenopodium album* L., *virens* and *viride*, were gathered on rubbish heaps near Embleton; *Althœa officinalis* by the roadside near Fleetham, one very large and handsome plant.—H. E. Fox, Durham.

CONCHOLOGICAL NOTES.

Shells at Riding Mill on Tyne.—A small gathering of shells from this place, sent by the Rev. H. H. Slater, M.A., which I have seen, included a specimen of *Pisidium amnicum*, one of *Limnæa peregra* var. *ovata*, two of *Ancylus fluviatilis*, several of *Vitrina pellucida*, a few *Zonites cellarius*, several *Helix rotundata*, one *Bulimus obscurus*, two *Clausilia laminata*, a *C. rugosa*, and several *Cochlicopa lubrica* var. *lubricoides*. These it may be well to record for the benefit of future writers on Northumberland mollusca.—John W. Taylor, Horsforth, July 4th, 1884.

FUNGUS FORAY AT SELBY.

On the 22nd October a small party interested in the study of toadstools investigated those of certain woods east of Selby. The party was in charge of Mr. George Massee, and the arrangements had been made by Mr. W. Norwood Cheesman. After a substantial breakfast at the latter's house, the party set off in a couple of conveyances provided by him. After a misadventure on the bridge, whereby the occupants of one conveyance narrowly escaped being precipitated into the river through the inordinate curiosity of their horse, who in the endeavour to investigate the whistle of a locomotive forcibly backed against the wooden parapet of the bridge, Osgodby Woods were reached. 'Too dry'—said or thought by everyone as the leaves rustled and crumbled under foot, and the only things of interest found included a beautiful specimen of *Agaricus sinuatus*, found by Mr. Fowler, while *A. laccatus* and *Lactarius subdulcis* were not uncommon. A short cut for Cliff Common Wood was attempted, which proved a mistake. It was along a lane in which the ruts proved to be not only numerous but very deep, and the determination of one of the drivers to drive across the ruts at acute angles produced sensations which were likened to navigation in the chops of the Channel, or jestingly suggested as beneficial for sluggish liver. Eventually all dismounted and walked. Cliff Common Wood, part of which contained an undergrowth of sphagnum and heather, was soon reached; here some good things were met with and duly stowed away. A short drive brought the party next to Blackwood Woods, in which good things turned up at almost every step. First, Mr. Soppitt appeared with some fine examples of *Torrubia ophioglossoides* parasitic upon *Elaphomyces granulatus*, and presently the whole party, on bended knees, were digging up the treasures, which penetrate a considerable depth below the surface. Mr. Roebuck found several specimens of *Cortinarius cinnabarinus*, and Mr. Fowler bagged a small colony of an edible species — *Agaricus nebularis*. Various species of *Lactarius* were abundant, and Mr. Cheesman conducted to where *L. deliciosus* with its green gills and blood-red milk grew in tolerable abundance; *L. chrysorrhœus* with its white milk changing to bright sulphur yellow when exposed to the air, grew along with it. *L. deliciosus*, notwithstanding its repulsive appearance, is probably our best edible fungus. Dr. Cooke says of it (Fungi, pp. 92):—'Universal commendation seems to fall upon this species, writers vying with each other to say the best in its praise, and mycophagists everywhere endorsing the assumption of its name, declaring it to be delicious. It is found in the markets of Paris, Berlin, Prague, and Vienna, as we are informed, and in Sweden, Denmark, Switzerland, Russia, Belgium; in fact, in nearly all countries in Europe it is esteemed.' This species, along with *Agaricus nebularis*, *A. rubescens*, *Gomphidius viscidus*, and *Russula alutacea*, were collected for cooking, the last mentioned having a very pleasant nutty flavour when raw. At Skipwith man and beast partook of refreshment, after which a start was made, again by a by-road, for Escrick Woods, where fungi proved plentiful, but daylight scarce; so after a most successful and enjoyable foray, the bulk of the specimens were carefully deposited in two large boxes, and the party started for Selby. The drive home from Escrick Woods in the waning twilight was cold, the temperature having lowered only too rapidly from the bright warmth of the autumnal day which had been chosen for the ramble. At Mr. Cheesman's a substantial repast, to which ample justice was done, awaited the hungry mycologists, after which they soon dispersed, leaving by rail for their respective homes.

The following is a list of the fungi collected during the day, 134 in number:—

Agaricus (Amanita) rubescens *Fr.*
Agaricus (Lepiota) granulosus *Batsch.*
delicatus *Fr.*
carcharias *Vers.*
Agaricus (Armillaria) melleus *Fl. Dan.*
Agaricus (Tricholoma) sejunctus *Sow.*
resplendens *Fr.*
flavobrunneus *Fr.*
Agaricus (Tricholoma) rutilans *Schæff.*
saponaceus *Fr.*
lascivus *Fr.*
cinerascens *Bull.*
Agaricus (Clitocybe) nebularis *Fr.*
clavipes *Vers.*
phyllophilus *Fr.*
dealbatus *Sow.*

Naturalist,

Agaricus (Clytocybe) fumosus *Pers.*
tuba *Fr.*
metachrous *Fr.*
fragrans *Sow.*
laccatus *Scop.*
Agaricus (Collybia) radicatus *Relh.*
platyphyllus *Fr.*
maculatus *A. & S.*
butyraceus *Bull.*
velutipes *Curt.*
confluens *Pers.*
dryophilus *Bull.*
Agaricus (Mycena) purus *Pers.*
lacteus *Pers.*
galericulatus *Scop.*
alcalinus *Fr.*
hæmatopus *Pers.*
sanguinolentus *A. & S.*
galopus *Schrad.*
acicula *Schæff.*
epipterygius *Scop.*
stylobates *Pers.*
Agaricus (Omphalia) umbelliferus *L.*
Agaricus (Entoloma) sericeus *Bull.*
sinuatus *Fr.*
Agaricus (Pholiota) mutabilis *Schæff.*
Agaricus (Inocybe) pyriodorus *Pers.*
rimosus *Bull.*
geophyllus *Sow.*
Agaricus (Galera) tener *Schæff.*
hypnorum *Batsch.*
Agaricus (Stropharia) æruginosus *Curt.*
squamosus *Fr.*
semiglobatus *Batsch.*
Agaricus (Hypholoma) sublateritius *Schæff.*
fascicularis *Huds.*
lacrymabundus *Fr.*
velutinus *Pers.*
hydrophilus *Bull.*
appendiculatus *Bull.*
Agaricus (Psilocybe) semilanceatus *Fr.*
ericæus *Pers.*
Agaricus (Panæolus) separatus *L.*
campanulatus *L.*
papilionaceus *Fr.*
Agaricus (Psathyrella) gracilis *Fr.*
atomatus *Fr.*
Coprinus atramentarius *Fr.*
niveus *Fr.*
plicatilis *Fr.*
Cortinarius armillatus *Fr.*
hemitrichus *Fr.*
leucopus *Fr.*
acutus *Fr.*
cinnabarinus *Fr.*
Gomphidius viscidus *Fr.*
Paxillus involutus *Fr.*
panuoides *Fr.*
Hygrophorus hypothejus *Fr.*
Hygrophorus pratensis *Fr.*
virgineus *Fr.*
coccineus *Fr.*
psittacinus *Fr.*
Lactarius torminosus *Fr.*
turpis *Fr.*
trivialis *Fr.*
pyrogalus *Fr.*
vellereus *Fr.*
deliciosus *Fr.*
pallidus *Fr.*
theiogalus *Fr.*
chrysorrheus *Fr.*
rufus *Fr.*
glyciosmus *Fr.*
mitissimus *Fr.*
subdulcis *Fr.*
Russula nigricans *Fr.*
adusta *Fr.*
depallens *Fr.*
rubra *Fr.*
cyanoxantha *Fr.*
fœtens *Fr.*
emetica *Fr.*
ochroleuca *Fr.*
alutacea *Fr.*
Nyctalis parasitica *Fr.*
Cantharellus aurantiacus *Fr.*
Marasmius ramealis *Fr.*
Boletus luteus *L.*
flavus *With.*
bovinus *L.*
badius *Fr.*
chrysenteron *L.*
edulis *Bull.*
scaber *Fr.*
Polyporus squamosus *Fr.*
perennis *Fr.*
annosus *Fr.*
versicolor *Fr.*
abietinus *Fr.*
vaporarius *Fr.*
Merulius corium *Fr.*
Thelephora laciniata *Pers.*
Stereum purpureum *Pers.*
hirsutum *Fr.*
Corticium ochraceum *Fr.*
comedens *Fr.*
Lycoperdon saccatum *Vahl.*
Scleroderma vulgare *Fr.*
Physarum nutans *Pers.*
Stilbum fimetarium *B. & Br.*
Pachnocybe subulata *B.*
Peziza firma *Pers.*
calycina *Schum.*
hyalina *Pers.*
Elaphomyces granulatus *Fr.*
Torrubia ophioglossoides *Tul.*
Xylaria hypoxylon *Grev.*

NOTES AND NEWS.

We have received from Dr. Seaton a copy of his Annual Report for 1882, as Medical Officer of Health to the Borough of Nottingham. It includes two maps showing the surface levels of the borough by means of contour lines. One of them is also coloured geologically, from the ordnance plan, but re-surveyed and amended in detail by a well-known Nottingham geologist, Mr. James Shipman, with the co-operation and valuable assistance of Mr. W. Talbot Aveline, F.G.S., formerly of the Geological Survey. Mr. Shipman's labours have taken him over ten years, and their result forms a most valuable and useful map.

The thirteenth annual meeting and conversazione of the Chester Society of Natural Science was held in the Town Hall, on Thursday afternoon and evening, September 25th, and was, as usual, a great success. An important feature of the meeting was the presence of distinguished members of the Iron and Steel Institute, at that time in session at Chester. Another was the presentation of the various prizes which form so marked a feature of the Chester programme. The most important of these, the 'Kingsley Memorial Medal,' was presented to Mr. A. O. Walker, F.L.S. The minor prizes were given for collections of birds' eggs, composite plants, butterflies, and moths.

The Leeds Geological Association visited Pateley Bridge on the 4th October, at the invitation of a number of gentlemen of the district interested in geological pursuits. Having been met at the station by a number of local scientists, including the Rev. A. Scott, the vicar; and Messrs. W. Storey, G. Metcalfe, A. Phillips, Jowitt, Whincup, and Robinson, the party proceeded to inspect the Scotgate Ash Quarries under the direction of Mr. B. Holgate, F.G.S., who first offered remarks on the general conditions under which the Nidderdale rocks were deposited. Mr. Whincup, formerly manager at the quarries, then conducted the party over the quarry, pointing out the principal features of interest which it contained. Time did not permit of any other part of the district being visited, but the Association hope to pay another visit to Pateley, some time in the spring.

The annual soirée of the Associated Literary, Scientific, and Art Societies of Liverpool was held in St. George's Hall, on Wednesday the 10th December last. The attendance was exceedingly large. The attractions of the evening included illustrated science lectures by Professor W. F. Barrett, Dr. J. Sibley Hicks, F.L.S., J. H. T. Ellerbeck, Rev. T. E. Espin, B.A., F.R.A.S., J. W. Ellis, L.R.C.P., and others; musical entertainments; and special exhibitions from the Microscopical Society, the Naturalists' Field Club, the Liverpool Museum, the Geological Association, and the Amateur Photographic Association, amongst which Mr. Galloway's archæological exhibition, and Mr. Frank Archer's fine collection of shells from the Mediterranean, attracted considerable attention. On the following evening the Mayor gave a soirée to about 5,000 working men in the same place, on which occasion, some of the lectures and most of the exhibitions of the previous evening were repeated.

It is somewhat surprising that so large a county as Lincolnshire should not before this have been able to boast of some organisation or other with a scientific object. This can hardly be due to the lack of scientific workers, for the county of Isaac Newton and Alfred Tennyson possesses several such who take high rank in their respective pursuits, while some of the most active scientific men in Yorkshire and elsewhere are of Lincolnshire birth or extraction We therefore note with satisfaction the formation of the 'Louth Naturalists' Society,' the first Lincolnshire society of its kind of which we are cognisant. We have received a copy of the rules and list of officers, whereby we note that Mr. E. Kendall is president, Mr. R. W. Goulding vice-president, and Mr. H. W. Kew is hon. secretary and treasurer. To these gentlemen we wish every success, and to their Society a long and prosperous career in the investigation of the much-neglected natural history of the county of Lincoln.

We learn with regret of the death of Mr. George Mawson, formerly of Cockermouth, on the 10th of November. He was well known as a lepidopterist, and the Transactions of the Cumberland Association for 1882-83 contains an enumeration of the Lepidoptera of West Cumberland, with localities, from his pen. We believe he was also an occasional contributor to our entomological periodicals.

An interesting presentation was made at Huddersfield, on the 25th of October, when a silver tea and coffee service and an illuminated address were given to Mr. C. P. Hobkirk, F.L.S., on the occasion of his removal from that town to take the management of the branch bank at Dewsbury. There was a goodly attendance of Mr. Hobkirk's friends, and in the course of the proceedings reference was made to the valuable service which he has during a period of thirty years rendered to the town of Huddersfield and to scientific progress, whether as founder of the Huddersfield Literary and Scientific Society, or as president of it and of the other Huddersfield societies, the Naturalists' and the Paxton, or as author of 'The History and Natural History of Huddersfield'—a model book of its kind, or as editor of this journal for nine years in conjunction wlth Mr. Porritt, or as author of a 'Synopsis of British Mosses,' or the sincere and appreciated friend of junior workers in natural history. In all these varied capacities—and they do not adequately represent all the phases of Mr. Hobkirk's usefulness, his merits were generously and freely spoken of.

We note with great regret that Mr. Albones, of Brigg, having succeeded in landing in New Zealand nearly a hundred stoats and weasels, has sailed again with a third instalment of these animals, about 150 in number, which have been got together in different parts of Lincolnshire. In this matter the New Zealand Government—who are otherwise noted for their liberality and sound judgment in matters scientific—have made a very great mistake. The fauna of New Zealand is so peculiar and so interesting that it behoves that Government to do everything in their power to preserve it. The result of the importation of such bloodthirsty little creatures will probably be disastrous to the native fauna. Their introduction seals in all probability the fate of such interesting but helpless creatures as the Apteryx, the Owl-parrot, and other wingless birds, which cannot but fall an easy prey to the new marauders. The mistake has been made before in New Zealand; the rabbits which were formerly imported are now a complete pest and over-run the colony, and it is to mitigate this pest that a fresh one is to be introduced. We trust that every New Zealander who values the integrity of the indigenous fauna will protest his utmost, and that the eyes of the Government may be opened before it is too late to remedy the evil. Doubtless we shall hear in a few years that the New Zealanders are at their wit's end to devise means for getting rid of the weasels.

And so history repeats itself. The result of the introduction of the European Sparrow into the United States is another proof of the folly of introducing aliens into a fauna. This bird was imported about the year 1869, for the purpose of checking the ravages of a moth (*Orgyia leucostigma*)—as if America were deficient in the number and variety of her insectivorous birds—and under State protection has increased enormously, while it has naturally failed, being a graminivorous conirostral species, to accomplish the desired end, while moreover it has ousted from their former haunts several valued and favourite indigenous insectivorous species. Thus the minds of the American ornithologists are much exercised about this little bird, and the American Ornithologists' Union appointed a committee to enquire into the 'Eligibility or Ineligibility of the European House Sparrow in America,' which committee has reported that the result of its wide-spread enquiries is overwhelmingly against the bird, and they urge that application should be at once made for the withdrawal of State protection. The report admits that the Sparrow feeds its young largely upon insects, although it prefers a diet of grain and seeds. An amusing and very voluminous controversy has been going on in the American journals between a few individuals who look with favour upon the stranger and the ornithologists, who are to a man against the 'cussed little Britisher' or 'infernal little fraud,' as some of them are pleased to dub him. The vernacular names of 'Gamin,' 'Hoodlum,' and 'Parasite' are also significant of the degree of estimation in which it is held.

Mr. Thomas Southwell, F.Z.S., has favoured us with a reprint of his new list of the Mammalia of Norfolk, which includes a comparison of its mammalian fauna with those of the other eastern counties of England for which lists have been printed. By this table it appears that Essex, Norfolk, and the united counties of Northumberland and Durham, possess each 41 species, while Yorkshire has 43. Suffolk and Lincolnshire would doubtless have been included in the comparison, were it not for the fact that their mammalian faunas have not as yet been catalogued.

Mr. Charles Ashford continues in the *Journal of Conchology* his very valuable papers upon the 'Darts of British Helices.' These organs afford an unfailing means of discriminating between closely allied species of Helix where outward characters fail us, as in the case of *Helix nemoralis* and *H. hortensis*. These are often considered to be varieties of one species, but an examination of their darts (which are very distinct from each other in character) is quite sufficient for the identification of adult specimens. A great service is conferred upon science by a conchologist of Mr. Ashford's calibre undertaking to work out so neglected a subject as this.

RAINFALL FOR NOVEMBER 1884.

STATION & OBSERVER.	Height of Rain-Gauge above Sea-level.	Total Rainfall for Month.	No. of Days on which Rain fell.	Total Fall to Date.				Heaviest Single Day's Fall.	
				In 1884.	Average of Past Years.	No. of Years.	Years of Average.	Amount.	Date.
	Feet.	Inches	Days	Inches.	Inches.	No.	Years.	Inches	
Derringham, Hull. Wm. Lawton	10	1·12	16	15·62	21·11	34	1850-83	0·25	30th.
Goole.—John Harrison...	25	1·01	11	16·79	—	9	1875-83	0·25	30th.
Wetwang, The Wolds, Rev. E. Maule Cole	235	1·62	12	20.46	—	—	—	0·33	30th.
Scarborough.— Allan Rowntree	130	2·19	18	19·31	26·39	18	1866-83	0·41	28th.
Baldersby, Thirsk.— W. Gregson	100	1·60	15	23·51	—	—	—	0·25	4th.
Masham.—Thos. Carter..	269	1·67	12	25·52	—	—	—	0·47	4th.
Shadwell, Leeds.— Geo. Paul	500	1·50	14	22·81	--	—	—	0·35	16th.
Leeds.—The Museum ...	183	0·79	19	20·33	22·86	30	(1853-62) (1865-84)	0·28	5th.
Horsforth.—James Fox	350	1·25	16	22·39	29·72	15	1870-84	0·27	4th.
Barnsley.—Dr. Sadler...	350	1·00	13	19·28	—	2	1882-83	0·32	4th.
Wentworth Castle. Wm. Fisher	520	1·06	11	20·66	30·22	8	1877-84	0·37	4th.
Ingbirchworth.— J. H. Taylor	853	1·62	16	28·49	43·30	12	1873-84	0·47	4th.
Dalton, Huddersfld. J. W. Robson	350	1·32	13	22·28	30·53	18	1866-83	0·48	4th.
Thorpe, Halifax.— F. G. S. Rawson	365	2·04	17	31·73	—	2	1882-83	0·56	4th.
Tuxford, Notts. — Grammar School, J. N. Dufty.	220	1·06	8	17·07	22·80	8	1876-83	0·33	30th.

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THE NATURALIST:

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WM. DENISON ROEBUCK, F.L.S.,

AND

WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

Contents:

PAGE

Merlins and their Training—*H. T. Archer* 145

The Ornithology of Upper Coquetdale—*Abel Chapman, M.B.O.U.* 150

Strasburger's New Investigations on the process of Fertilisation in Phanerogams—*Thomas Hick, B.A., B.Sc.* 157

The Lepidopterous Fauna of Lancashire and Cheshire—*John W. Ellis, L.R.C.P., &c.* 163
(INTRODUCTION AND PART I., BUTTERFLIES.)

Ornithological Notes:— 148, 149
Twite near Thorne Waste—*Rev. Adrian Peacock, M.A.*; the Robin in Salt Creeks—*Rev. H. A. Macpherson, M.A.*; Whimbrel in Cumberland—*Id.*; Bittern in Yorkshire—*J. Backhouse, Jun.*; Hawfinch in Cumberland—*Rev. H. A. Macpherson, M.A.*; Breeding of Reed Warbler in Cheshire—*Charles Oldham*; Landrail near Tadcaster in December—*Rev. J. Chaloner*; Woodcocks in Notts.—*J. Whitaker, F.Z.S.*; Bird-notes from Nidderdale—*Wm. Storey.*

Conchological Note:— 156
Freshwater Shells near Manchester—*Charles Oldham.*

Bibliography of 1884 (Part I.—Mammalia) 152

Book Notice (Hobkirk's Synopsis of British Mosses, 2nd Edition) 160

Notes and News 161

Rainfall (Yorkshire and Nottinghamshire Stations), for December 1884 162

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IT being the wish of the Editors to make the journal the recognised organ for information concerning the natural history of the North of England, they hope to rely on Naturalists keeping them supplied with articles and short notes from time to time.

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Short Notes of important occurrences will be received up to the 20th of the month, and specially urgent ones even later.

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Receipts for Subscriptions are enclosed with the next Number, and are not sent direct unless stamp be sent for postage.

BOOKS RECEIVED.

T. W. Gissing's Materials for a Flora of Wakefield, 1867, 8vo, cloth, 59 pp. [Mr. A. F. Gissing.
Journ. of Northptnsh. Nat. Hist. Soc., Nos. 19 & 20, Aug. & Nov. 1884. [Society.
Sheffield Naturalists' Club—Thirteenth Annual report and Record of Transactions, December 1884. 24 pp. [Club.
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Journal of Microscopy and Natural Science.—Edited by Alfred Allen. January 1884. [Editor.
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Notes on Lepidoptera observed in the neighbourhood of Sandridge, Herts.—By A. F. Griffith, M.A. 9 pp. [Author.
List of British Vertebrate Animals.—By Francis P. Pascoe. 85 pp. [Author.
*How the River Lud cut through Hubbard's Hills.—By W. Mawer, F.G.S. 15 pp. [Author.
Scottish Naturalist, edited by Prof. Trail, No. 7, New Series, Jan. 1885. [Editor.
*Report of Lower Mosley Street Schools' Natural History Society, Manchester, October 1884. [Society.
Mineralogical Magazine, vol. vi., No. 28, Dec. 1884. [Mineralogical Society.
Eastbourne Natural History Society. Part 5 and 6 of vol. I., New Series. [Soc.

Memoirs marked * will be noticed in our Annual Bibliography of the Literature of the Physical Features and Natural History of the North of England.

EXCHANGES.

Notices of Exchange inserted free of charge to Subscribers.

Wanted.—Yorkshire Naturalists' Recorder, 1872-1873. Offered for it, Naturalist, vol. 5, or cash.—Editors of the Naturalist, Park Row, Leeds.

Books.—Ewald's "Life and Times of Lord Beaconsfield," complete, steel plates, new; twelve copies of Forrest's third pamphlet on the Antiquities of Rombalds Moor, contains lithographs of rock-sculptures, slightly water-stained, offered for cash.—Geo. Roberts, Lofthouse, near Wakefield.

The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, &c., is **John Eggleston, Park Place, Sunderland.** Lists free.

MERLINS:
Their Training, Habits, &c.

By HENRY T. ARCHER,
Newcastle-upon-Tyne.

All naturalists know what a plucky, bold little fellow the Merlin is—a very Peregrine in miniature, both as regards his courage and personal appearance.

That so few keep these birds is perhaps mainly due to the idea that they are difficult to train and require a good deal of attention and management. This, however, is quite a mistake; and I will now set forth as briefly as possible how they may be kept in confinement and trained at little or no expense, and so afford great enjoyment and recreation to anyone who has the command of a few fields, or is near any open moor or common.

Firstly, then, I should say the most requisite quality in training Hawks is patience; this with gentleness and a certain intuitive knack of handling them, which comes naturally to anyone fond of birds, will soon overcome all obstacles.

We will now suppose that you have purchased a Merlin (in the season they are easily obtainable). A bird of the year is to be preferred, and if possible one that has flown at liberty and caught its own prey before coming into your possession. You next require

Jesses,
Leash,
Hood,
Lure,
A loud metal whistle,
A block of wood about 1 ft. high.

The latter is for the bird to stand upon. The block must have a small staple driven into the side to which the leash is attached when the bird is perching. The jesses you can make yourself by cutting two long strips from a pair of old dogskin or Hexham tan gloves. Cut down the middle finger of each glove as far as the wrist. Through these strips two slits must be made, one at each end. The leash is simply a leather boot lace with a button fastened to one end. The hood any saddler will make for about a couple of shillings: but Merlins have a great dislike to being hooded, and once when you get them to sit quietly on your hand in the field I do not think a hood at all necessary.

The lure you can also easily make yourself. All you require is a triangular piece of metal or iron, on the two sides of which you must

tie some wing feathers of a pigeon or any similar bird. Then at the narrow end you fasten a strong piece of string with which to swing the lure round in the air when you are out in the field flying your bird, and another piece of string with two ends to it by which you tie the bird's food.

A small bell may be attached on one leg or not, as you like. I use one on which I have my name and address engraved, and by this means I recovered my favourite Merlin 'Nell,' after an absence of four days early this year.

Now we must go back a little to show how the jesses are to be placed on the Merlin's legs. Take one of the jesses and put it round the leg and draw one of the points through the slit, making it close round the leg, put it through again and draw around the leg, but not too tightly, and it will then be in its proper place. Do the same with the other leg, and your jesses are then on as they should be. Now take the leash and pass the unbuttoned end through both of the remaining slits of the jesses and draw it up to the button at the other end, and your bird is ready to be placed on the block, one end of the leash being passed through the staple and so fastened.

You can keep your bird in any suitable outhouse or spare room, and should always have a little sawdust and sand round the block for the castings, &c., which should be removed two or three times a week.

Having then got the jesses and leash on your bird, and the bird removed to where you intend to keep it, give it a small piece of meat (raw or cooked, it matters not which, and either beef, mutton, liver, or kidney will do, but no fat), and now leave it in absolute quietness for twenty-four hours.

When you feed your bird the next day (and it should be noted here that Merlins are fed only once a day, and that, at as near the same time as possible; and when you are flying them out in the open you do not feed them at all the day before), give him his food from your hand, tearing up the meat into small pieces, and blow your whistle every now and then. Repeat this for three or four days, until your bird gets accustomed to you. After this you now tie the meat on the lure every day, and untying the leash from the block hold the lure a short distance away from the bird and get it to fly on to the lure, and so feed from it, at the same time blowing your whistle when you offer the lure. Increase the distance every day until at last you can get the Merlin to come to you, say at a distance of ten yards. You can then take the bird out into the field and give him his first flight to the lure for food. To do so you must have a line of very fine whipcord about eighty yards long, which must be tied to the

end of the leash, and which is called the 'crèance.' Here you require the assistance of a companion, who should hold the bird on his left hand. A strong gardening glove is necessary, as Merlins have claws like needles and can inflict an ugly scratch at times. Having given your companion the bird, you hold up the lure with his food and let him have a good look at it. Now walk slowly backwards unwinding the crèance as you go, and when you have gone about thirty yards blow your whistle and hold up the lure, your companion at the same time throwing up the bird in the air towards you. For the first three or four attempts the bird may be puzzled what to do, and may fly a short distance and then alight on the ground. Never mind! go to him with the lure and give him a bite of food from it and then try again. He will soon fly to you and take his food from the lure on your hand.

You must now daily increase the distance until he comes to you the full length of the crèance. Having got your Merlin to do this satisfactorily your chief difficulties are overcome, and you can try him without the crèance and leash. The latter you withdraw from the jesses by simply taking hold of the button and pulling it through the two slits of the jesses. You should next try your Merlin with a live sparrow. Providing yourself with one, you go out into the fields again with a companion. *You* now take the Merlin on your left hand, withdrawing the leash and merely holding the Merlin by the two jesses, which you pass between your fore and middle finger. Let your companion take the sparrow and hold it up before the Merlin and then gradually walk backwards until he is about ten or a dozen yards away; he must then throw the sparrow up in the air in your direction, so as to give the Merlin a good chance at first, and at the same time you throw the Merlin up towards the sparrow. He may not succeed in capturing at first, but he will soon learn to do so, and you can then increase the distance until he can capture a sparrow with fifty or sixty yards start. When he can do this the real enjoyment of flying your Merlin at wild birds commences; but now comes also the time when your utmost care will be required. If your bird at any time gives over the pursuit of his quarry and seems to be 'making off' on his own account, out with your whistle at once and swing the lure to attract his attention.

We will suppose he has now caught his prey (which is killed at once with a saw-like twist at the back of the neck), and having followed him you must walk slowly up to your bird, which will be standing on the ground with the sparrow in his claws. You gradually approach in circles, drawing nearer and nearer each round, whistling softly and calling him by his name—and occasionally swinging the

lure, to which should be tied some fresh raw meat. When you are close to him stoop down and offer the lure to him, at the same time gently withdrawing the bird from him which he has caught, and which will do for his meal next day. At this time Merlins are very apt to what is termed 'carry.' That is, having caught their prey they naturally want to eat it there and then, and when you go up with the lure they fly off with their bird twenty or thirty yards, and repeat this again and again. This is a very bad fault in a Merlin, and one which you should do your very utmost to overcome.

In addition to birds of all kinds, dead or alive, Merlins are very fond of mice. They should occasionally have feathers mixed with their meat; but cotton wool or gun tow will do just as well. In warm weather they should have a bathe two or three times a week at least. I take mine out into the garden and give them a flower-pot saucer to wash and dabble about in. They generally commence by taking two or three sips of water and then walk in and splash about until they are thoroughly drenched. Merlins are generally considered not to be so good at 'waiting on' as Kestrels, but my 'Nell' will sometimes fly to great distances and yet always come back obedient to the whistle and lure. In the summer time they can be flown every other evening or morning if convenient: just now I have mine out three times a week. Of the beauty of these birds and the gracefulness of their flight, especially when coming down to the lure, I could say a great deal; but I have already trespassed too far, and others may not be so interested in these bright-eyed pets as I am. I must, however, in concluding say how greatly I have been indebted to my kind friend Mr. Robert Duncan, naturalist, of this town, for his valuable assistance and advice in all matters relating to Hawking with Merlins.

ORNITHOLOGICAL NOTES.

The Twite near Thorne Waste.—I found the Twite or Mountain Linnet nesting on the bank of a drain in the parish of Eastoft, Yorkshire, in 1875. As the crow flies, the place could not be more than a mile from Thorne Waste. I watched the birds through a telescope for three or four days, and became morally certain of their identity, though at that time I had never seen living specimens. I chronicled their nesting in Hardwicke's Science Gossip, xi. 141. The very same summer, Mr. Simpson, bird-stuffer of York, sold my brother a specimen—male or female I cannot this moment say—which he averred to have been shot on the Waste, and sent to him in the flesh.—ADRIAN PEACOCK, Barkingside, Ilford, Essex, November 28th, 1884.

The Robin in Salt Creeks.—Every moment that I have had to spare this autumn has been given to working at the salt marshes on the Solway. On three separate occasions, and on three different marshes, I have been surprised to meet with a solitary Robin (*Erithacus rubecula*) flying up a creek in the middle of the marsh, and apparently perfectly at home in his surroundings, though on each occasion a strong wind was blowing from the west. In Skye, I have met with robins in very wild situations; but a salt creek seems the last place to meet with this species.—H. A. MACPHERSON, 3, St. James' Road, Carlisle, December 20th, 1884. Naturalist,

Breeding of the Reed Warbler in Cheshire.—On the 29th of May last, when searching in company with a friend for the eggs of the Sedge Warbler (*Acrocephalus phragmitis*), among the reedy margins of Pick-mere, near Northwich, we were agreeably surprised to find a nest of *Acrocephalus streperus* suspended on the reeds, and containing four eggs. The nest agreed exactly with the description given by Yarrell, and the eggs were not incubated in the least degree.—CHARLES OLDHAM, Syrian House, Sale, Cheshire, December 1884.

—A typical egg of this species, taken from the nest described, accompanied this note. The record is of great interest, since it is by far the most north-westerly locality in which this species has been known to breed in Britain, though in eastern England it nests annually as far north as mid-Yorkshire.—W.E.C.

The Hawfinch in Cumberland.—Since alluding to the Hawfinch (*Coccothraustes vulgaris*) at p. 32, I have received a district list from Mr. Hodgkinson of Preston (late of Carlisle), in which he observes that the late Mr. Cooper, the collector of T. C. Heysham's rarest birds, told him that this species had *bred* at Woodside, near Carlisle. Considering that in Cooper's time the range of the Hawfinch was more southern than it now is, the statement seems rather unlikely ; but at any rate it is suggestive. As illustrative of the Hawfinch being a winter visitor to Cumberland, I may mention that a male was killed near Carlisle by a cat, from which it was taken, early in December 1884.—H. A. MACPHERSON, 3, St. James' Road, Carlisle, December 20th, 1884.

The Whimbrel in Cumberland.—When recently enjoying Mr. C. M. Adamson's delightful book, 'More Scraps about Birds,' I was surprised to read at p. 60, that the Whimbrel (*Numenius phæopus*) 'is rarely seen on the Cumberland coast in autumn.' The statement rests on the authority of the late Mr. Cooper of Carlisle, who shot the Redbreasted Snipe and other good birds for the late Mr. T. C. Heysham ; and who was, no doubt, an admirable observer. Possibly the species has *altered* its taste as regards the Solway during the last twenty years. At all events, it is now a thorough 'periodical visitant.' I saw a fair number upon our coast in August and September 1884 ; and in 1883, one was killed in November, though few, if any, really *winter* with us.—H. A. MACPHERSON, 3, St. James' Road, Carlisle, December 20th, 1884.

Capture of a Bittern in Yorkshire.—About a fortnight ago I had the opportunity of examining a Common Bittern (*Botaurus stellaris*), which had been killed during the month (December) at Grimston Park, near Tadcaster. It was in fine condition and of large size.—J. BACKHOUSE, Junr., West Bank, York, December 31st, 1884.

Land-rail near Tadcaster in December.—Shooting at Healaugh on the 24th of this month, E. C. Brooksbank killed a Land-rail (*Crex pratensis*), a very unusual occurrence at this time of year.—J. CHALONER, Newton Kyme, Tadcaster, December 31st, 1884.

Woodcocks in Notts.—A large flight of these birds has arrived, and I have heard of them being shot all over the county, many being found in turnip fields ; we have shot twelve in two days in the big wood here. There are also very large flocks of Fieldfares about.—J. WHITAKER, Rainworth Lodge, Notts., November 20th, 1884.

Bird-notes from Nidderdale.—On Saturday, December 6th, a fine male specimen of the Common Sheldrake (*Tadorna cornuta*) was shot near Pateley Bridge, out of a flock of four, which were flying in a westerly direction. This is, as far as I can gather, the only time of its occurring in this district.

An instance of the Great Grey Shrike (*Lanius excubitor*), also was noted in Harefield Woods, on Saturday, December 27th. A previous observation of this bird had been made in the winter of 1883.

Also, about a week ago, a pair of Goldfinches (*Carduelis elegans*) were noted near Pateley Bridge. This bird is very rare here as a resident species, there being only two instances of its breeding (in the summers of 1882 and 1883), both of them in an orchard.—WM. STOREY, Pateley Bridge, January 13th, 1885.

THE ORNITHOLOGY OF UPPER COQUETDALE.

By ABEL CHAPMAN,

Silksworth Hall, Sunderland; Member of the British Ornithologists' Union.

In reference to Mr. Cordeaux's Notes on Upper Coquetdale, perhaps the following few observations may be of interest to the readers of the *Naturalist*. They are offered with all deference to Mr. Cordeaux's well-known scientific attainments, and with a view to prevent misconceptions as regards certain birds of that locality, which a perusal of the Notes in question appears to invite. I should mention that for a long period I have taken the greatest interest in the bird-life of the border moorlands, and for the last ten years have shot over an extensive tract of fell in the immediate neighbourhood referred to by Mr. Cordeaux, during which time I have accumulated a considerable series of observations at all seasons.

Falco peregrinus Tunst. **Peregrine Falcon.**

I have never seen this bird except in autumn and winter, and then only rarely.

Turdus torquatus L. **Ring Ouzel.**

One of the commonest moor-breeding birds, arriving at the end of March or early in April.

Phylloscopus sibilatrix (Bechst.). **Wood Wren.**

Breeds in the woods on the fell-sides, up to a considerable elevation.

Motacilla melanope Pall. **Gray Wagtail.**

Some remain throughout the winter in mild seasons such as the present. Last week, when finishing the grouse season, I noticed two or three of them still running about the burn-sides.

Linota flavirostris L. **Twite.**

Breeds among the heather, though not abundantly.

Columba œnas L. **Stockdove.**

Breeds regularly. Several of the crags on my ground are occupied by a pair or two, which arrive there in March. These crags are often far out on the moors, and the Ringdove never breeds in such places. I never saw the latter breed in a sheer crag, though they occasionally do so in an ivy-grown cliff or scaur.

Totanus calidris (L.). **Redshank.**

Breeds in scattered pairs all over the moorland district. In some of the low-lying rushy 'haughs' as many as half a dozen pairs, or more, may be found nesting together, along with Snipes and Lapwings.

Ægialitis hiaticula (L.). **Ring Dotterel.**

A few pairs appear every spring on the Coquet, but they do not remain inland to breed. They do so on the coast within twenty or thirty miles.

Mergus serrator L. **Red-crested Merganser.**

I have never seen this bird come much inland, though there are a fair number on the coast in suitable localities. It is essentially marine in its haunts, and I should think it extremely improbable that it visits the moorland loughs in winter. The 'mergus' which *does* come inland, is the Goosander (*M. merganser* L.); but even it does not frequent the still waters of the loughs, preferring streams such as Coquet and Reedwater, where it feeds on trout.

The diving ducks which come to the border loughs are nearly all Golden Eyes—*Clangula glaucion* (L.)—which appear very regularly in October, and are, next to the Mallards, the commonest of the duck tribe. Most of the diving ducks which I have shot, or seen shot, have been of this species; but, though from time to time I have killed various other kinds of ducks at the inland loughs, I have never, as above stated, seen a Merganser in such situations.

The above remarks only apply to some of the birds which are mentioned by Mr. Cordeaux; but I must add that it is in the omissions from his 'list' that its inadequacy to convey a correct idea of the local avi-fauna is most noticeable. I trust Mr. Cordeaux will pardon me in saying that I very much question the utility of forming 'lists' of birds on so short an acquaintance as his with a very wide and wild district. December 12th, 1884.

We would point out that Mr. Cordeaux's paper did not profess to be a 'list,' or indeed to be anything more than 'ornithological notes' thrown into list form for the reader's convenience. We also think that when a field-ornithologist of Mr. Cordeaux's standing visits a locality concerning which but little has appeared in print, the observations he makes should certainly be placed on record. We were pleased to have the opportunity of publishing it, nor can we be less so when it has been the means of eliciting such interesting supplementary observations as those we now publish from the pen of an ornithologist so thoroughly acquainted with the district as Mr. Chapman is.—Eds.

BIBLIOGRAPHY OF 1884:

Papers and records published during the year with respect to the natural history and physical features of the North of England.

THE present series of papers aims at giving a complete citation of titles of books, papers, and records published in 1884 which have reference to the ten north English counties and the Isle of Man, together with an indication of the gist of the contents of each in as concise a form as is consistent with making these papers of interest. Of lists indeed, and lengthy papers generally, the very briefest indications only can be given, but of single records it is thought well to give fuller notice, or sometimes even the whole substance of it, of course divested of unnecessary verbiage. We need not apologise for presenting to our readers matter of this kind: it may not be interesting to all, but to those who are actually working at any particular subject it will be of decided value. We ourselves in some of our previous work would have valued highly the assistance which such papers give.

It may here be remarked that the indications of counties given at the head of each citation is intended for the benefit of local faunists and florists; and that as to dates—1884 is understood where no other year is implied or expressed.

PART I.—MAMMALIA.

ANON. ['LITTLE ROD']. **Cumberland.**

Notes on the Squirrel [*Sciurus vulgaris*]. Land and Water, September 6th, p. 246.

Observations made on the Cumberland shore of Lake Ullswater; during the severe winter following the memorable snowstorm of December 17th, 1878, a pair of Squirrels came to the house in company with small birds, Rooks, Jackdaws, Wood Pigeons, Mice and Rats, for food. Other details of habits are given. Cumbrian name 'Conn.'

BERWICKSHIRE NATURALISTS' CLUB. **Northumberland.**

Report of Meeting held at Middleton Hall. Proc. Berw. Nat. Club, x. 228-9 and 280-2.

Note on the finding of bones of Red Deer (*Cervus elaphus*) and of *Bos urus* in Cresswell Moss, Glendale Valley; and discussion as to the origin of the Chillingham Cattle.

GEORGE BOALER. **Notts.**

Deer Killed by Lightning. Land and Water, July 19th, p. 64: Zool., August, p. 336.

Lightning struck an oak in Welbeck Park and killed three Deer; an unprecedented circumstance, though the trees are often struck.

BRADFORD NATURALISTS' SOCIETY.

Report of Meeting. Naturalist, June, ix. 196. **Yorkshire.**

Squirrel [*Sciurus vulgaris*] noted in Bingley Wood by H. T. Soppitt.

W. E. BRADY. **Yorkshire.**

Badger [*Meles taxus*] **near Barnsley.** Naturalist, September, x. 34.

A fine male, weighing about 35 lbs., taken at Wortley, April 22nd, and afterwards turned out on Lord Wharncliffe's Wensleydale property.

Naturalist,

J. J. Brigg. **Yorkshire.**

A White Weasel [*Mustela vulgaris*]. Field, January 5th, p. 30.

A Weasel, perfectly white, including the tail, was caught at Kildwick, November, 1883. Eyes dull pink. Editor adds that white *weasels* are rarely met with.—Mr. John Colquhoun writes subsequently (Field, January 19th, p. 91) that it was probably an albino. White stoats are not—but change during winter.

Thomas Bunker. **Yorkshire, Lincolnshire.**

Capture of a Rudolphi's Rorqual (*Balænoptera borealis*) **at Goole.** Naturalist, November, x. 87-88; Zool., December, p. 483.

Captured on the 5th of September; now in the British Museum.

James Carter. **Yorkshire.**

Range of the Dormouse [*Myoxus avellanarius*] **in England.** Field, April 12th, p. 499.

One captured several years ago at Lofthouse, near Whitby.

Thomas Carter. **Yorkshire.**

Badger [*Meles taxus*] **in North Yorkshire.** Zool., February, p. 63; Nat., February, ix. 116.

One unearthed by foxhounds at Slenningford Park, near Ripon, December 5th, 1883.

John Cordeaux.

The Spurn. Naturalist, August, x. 2. **Yorkshire.**

Notes on the bones of *Bos longifrons*, of Red Deer, and Wild Boar in the Kilnsea kitchen-middens, and of *Bos primigenius, Cervus megaceros*, *C. elaphus*, *Rhinoceros* and *Trichecus rosmarus* in the Holderness gravels.

Notes from the Humber in the Autumn of 1884. Field, November 22nd, p. 716.

Incidental references to Seal (*Phoca vitulina*) and Porpoises (*Phocæna communis*) off the Yorkshire Coast at Dimlington.

John Cordeaux.

In Upper Coquetdale. Field, August 2nd. p. 152. **Northumberland.**

The notes include the following references:—Fox (*Canis vulpes*); Water Rats (*Arvicola amphibia*); Squirrel (*Sciurus vulgaris*)—imported twenty years ago—now plentiful; Polecat (*Mustela putoria*)—quite extinct; Stoat (*Mustela erminea*) and Weasel (*M. vulgaris*)—still common; Otter (*Lutra vulgaris*)—by no means rare.

John Cordeaux. **Lincolnshire.**

Wild Cat [*Felis catus*] **in Lincolnshire.** Zool., Sept., p. 380-1; Naturalist, Sept., x. 33-34; Trans. Norf. and Norw. Nat. Soc., 1883, iii. 676A, 676B.

Includes notes also on other mammals and on a few birds.

A. G. L. D. (Sessay). **Yorkshire.**

Supposed Collection of Strawberries by a Hedgehog. Field, Aug. 2nd, p. 153.

Records that Short-tailed Mice (*Arvicola agrestis*?) picked strawberries and left them in little heaps.

Editor of Field. **Lancashire, Yorkshire, Westmoreland.**

Red Deer [*Cervus elaphus*]. Field, February 9th, p. 193.

Review of Richard Jefferies' book on 'Red Deer.' Mentions that in [Yorkshire and] Lancashire the great forests of Bowland and Blackburnshire held Red Deer until 1805, and that at the present time a few still roam on Martindale Fells in Westmoreland, descendants of the original wild stock, even though they may be now said to be in a state of semi-domestication.

Editor of Field. **Durham.**

Distribution of the Dormouse [*Myoxus avellanarius*] **in England.** Field, May 3rd, p. 597.

Repetition of Mennell and Perkins' record for Co. Durham.

THOMAS FORD. **Lincolnshire.**

Exportation of Stoats to New Zealand. Field, December 6th, p. 771, and other journals.

Mr. Allbones, of Brigg, has collected 158 Stoats (*Mustela erminea*) and Weasels (*M. vulgaris*) for this purpose; his third consignment.

EDWARD J. GIBBINS. **Yorkshire.**

Origin of the name 'Lobster' applied to the Stoat [*Mustela erminea*]. Zool., April, p. 153-4.

Quotes Mr. John Hawell's statement that it is called 'Clubster' near Northallerton, and Mr. J. A. Wheldon's that about Scarborough it is called 'Clubstart,' and discusses the etymology of these terms.

J. E. HARTING.

Greater Horse-shoe Bat at Oxford. Zool., December, p. 483. **Yorkshire.**

Has a 'note of one taken at Carperley, Wensleydale, by Mr. Carter, of Burton House, Bedale.' [The specimen here referred to was a Noctule (*Vesperugo noctula*).—W.D.R.]

ROBERT LEE.

Additions to the Yorkshire Fauna. Field, May 31st, p. 737. **Yorkshire.**

Record of a 'curiously coloured Stoat,' brought on May 23rd. It was mostly yellowish dun, and the tail was not black, whereupon the Editor suggests that it may be a large Weasel.

T. LISTER. **Yorkshire.**

Natural History Notes for the Barnsley and South Yorkshire District. Naturalist, February, ix. 118.

Records of Otter (*Lutra vulgaris*) and Bat (*Vespertilio pipistrellus*) in autumn, 1883.

N. MCLACHLAN. **Durham.**

Range of the Dormouse [*Myoxus avellanarius*] **in England.** Field, April 5th, p. 488.

Observed some fourteen or fifteen years ago, at Headlam, a village about half way between Darlington and Barnard Castle.

A. M. NORMAN. **Northumberland.**

Address to . . the Tyneside Naturalists' Field Club. . . May 27th, 1881. N. H. Trans. Northumberland, Durham, and Newcastle, viii. 68 (1884).

Water Rat (*Arvicola amphibia*) noted at Corbridge-on-Tyne, June 6th, 1880.

T. N. P[OSTLETHWAITE]. **Cumberland.**

Range of the Dormouse in England. Field, April 5th, p. 488.

Has frequently met with it in the district of Millom, South Cumberland. One was shown him some winters ago frozen to a piece of wood, and in 1883, while trout fishing, a boy with him found one amongst the rocks on the bank of the stream.

W. DENISON ROEBUCK and W. EAGLE CLARKE. **Yorkshire.**

Notes on the Vertebrate Fauna of Yorkshire. Zool., May, pp. 171-184; Naturalist, April and May, pp. 147-151, 167-176.

Supplementary to the authors' work on 'The Vertebrate Fauna of Yorkshire,' 1881.

WM. DENISON ROEBUCK. **Yorkshire.**

Natterer's Bat [*Vespertilio nattereri*] **at Pateley Bridge.** Naturalist, June, ix. 194 and 197.

A second instance, confirmatory of its first occurrence in that locality.

The Dormouse [*Myoxus avellanarius*] **in Yorkshire.** Field, April 5th, p. 488.

Comprehensive and lengthy summary of Yorkshire information, showing that it is very widely though sparingly distributed throughout the county.

HENRY RUDKIN. **Lincolnshire.**

Range of the Dormouse [*Myoxus avellanarius*] **in England.** Field, May 24th, p. 702.

Believes it is to be met with in most of the woods of South Lincolnshire, at least those between Grantham and Bourne. In 1878 one occurred in Ropsley Rise Wood, and one some years after in another wood not far off.

C. F. S. (BOLTON PERCY).

A Cumberland Marsh. Field, April 19th, p. 560. **Cumberland.**

The marsh bears the name of Drigg Common. The mammalian notes refer to the Fox (*Canis vulpes*), Rabbits (*Lepus cuniculus*), and the Marten (*Martes sylvestris*).

JOCK SCOTT. **Lancashire.**

Range of the Dormouse [*Myoxus avellanarius*]. Field, April 19th, p. 560.

One taken in its nest some years ago, near the southern (Lakeside) end of Windermere Lake.

THOMAS SOUTHWELL. **Yorkshire, Durham, Northumberland.**

Mammalia of Norfolk. Trans. Norf. and Norw. Nat. Soc., 1883, iii. 657-676.

A comparison instituted between the mammalian faunas of Norfolk, of Yorkshire, and of Northumberland and Durham; and at p. 676 is given a table showing the species which occur in each.

THOMAS SOUTHWELL. **Northumberland, Durham.**

Black Rat (*Mus rattus*) **at Newcastle.** Naturalist, November, x. 88.

Particulars of a specimen sent to Mr. J. H. Gurney.

WM. STOREY. **Yorkshire.**

Lesser Horse-shoe Bat [*Rhinolophus hipposideros*] **in Yorkshire.** Field, April 12th, p. 499.

A fine male taken in some old disused coal levels in Smelthouse Woods near Pateley Bridge, April 5th; this is first instance for Nidderdale, though it is well known to occur at Eavestone near Ripon.

Distribution of the Dormouse [*Myoxus avellanarius*] **in England.** Field, May 3rd, p. 597.

Joseph Kirkley found a nest with several young in Brimham Woods. Last spring Storey observed a Dormouse in Guyscliffe Woods. George Charlton has a living one, taken hybernating in Wath Woods. All these localities are near Pateley Bridge, in Nidderdale, where a few are met with annually by the woodmen.

Albino Mole [*Talpa europæa*] **in Nidderdale.** Naturalist, November, x. 88.

One taken at Brimham.

JOHN P. THOMASSON. **Lancashire or Yorkshire.**

Range of the Dormouse [*Myoxus avellanarius*] **in England.** Field, March 29th, p. 447.

Some fifteen or twenty years ago he found several nests on the banks of the river Hodder, dividing Lancashire from Yorkshire, and saw the owner. On one occasion the Dormouse was caught by a cat as it ran to ground when disturbed.

W. E. W. **Yorkshire.**

A Cunning Fox [*Canis vulpes*]. Naturalist's World, July, i. 119.

One known to smell at a Moorhen's eggs on the Wharfe side every day till nearly hatched, before eating them.

J. A. WHELDON. **Yorkshire.**

Water Voles [*Arvicola amphibia*]. Science Gossip, December, p. 281.

The Water Voles on the Wiske, near Northallerton, are noted as being entirely vegetable feeders. Near Scarborough it is almost supplanted by the Brown Rat (*Mus decumanus*).

YORKSHIRE NATURALISTS' UNION. **Yorkshire.**

Report of Meeting at Sherburn, June 2nd. Naturalist, July, ix. 220.

Water Shrew (*Crossopus fodiens*), Common Shrew (*Sorex tetragonurus*), Squirrel (*Sciurus vulgaris*), and Hedgehog (*Erinaceus europæus*), noted.

Report of Meeting at Hawes. Naturalist, August, x. 18.

Mole (*Talpa europæa*) observed swimming in the beck below Whitfield Gill Force, Wensleydale, June 28th.

Report of Meeting at Helmsley. Naturalist, September, x. 41.

Water Vole [*Arvicola amphibia*] caught in Beckdale, August 4th.

Report of Meeting at Spurn Point. Naturalist, November, x. 92.

On the 3rd of September, Common Shrew (*Sorex vulgaris*), and Hedgehog (*Erinaceus europæus*), noted near the point of the headland.

VARIOUS WRITERS. **Cumb., Westm., Nthb., Dhm., Yks., Lincs., Dby., Lancs., Ches.**

Records of Otters and Accounts of Otter-hunts.

F. Kirton and W. Oddie record their occurrence near Thirsk (Nat. Hist. Journ., May 15th, viii. 80). W. J. Cummins records one killed near Witton-le-Wear, Co. Durham, February 3rd, which weighed 11 lbs., and measured 35 inches from nose to tail (Field, February 9th, p. 187). William Storey records a female, three parts grown, killed in the Nidd at Killinghall, Yorkshire, January 26th, very rare so far up that river (Field, March 22nd, p. 420). 'M. (Kelso)' records one caught in the nets at the Greenhill salmon fishery near Norham, weighing 24 lbs., and measuring 4 feet 2 inches in length (Land and Water, August 30th, p. 214). Records of Otter-hunting in Northumberland, Cumberland, Westmoreland, Yorkshire, Lancashire, and Cheshire, are given in the Field, April 19th, p. 560; May 24th, p. 731; May 31st, p. 749; and September 20th, p. 403; and in Land and Water, May 31st, p. 503; August 9th, p. 142; August 30th, p. 225; September 6th, p. 249; September 20th, pp. 289, 293; and October 4th, pp. 342, 343. An anonymous paragraph (Land and Water, January 5th, p. 16) records a 14 lb. Otter shot in the river Glen near Spalding, a locality where they are very rarely met with; 'G.B.' gives a note of a terrier pulling down an Otter at Bulmer Beck near Castle Howard, N.E. Yorkshire (Land and Water, April 19th, p. 364); and 'Heron (Derby)' records that Otters are on the increase in the Derbyshire Derwent (Field, May 24th, p. 712).

VARIOUS ANONYMOUS WRITERS. **Lancashire, Westmoreland, Yorkshire.**

Range of the Dormouse [*Myoxus avellanarius*] **in England.** Field, April 5th, p. 488; April 12th, p. 499; and May 3rd, p. 597.

'Teucer' has seen it near Stamford Bridge in Yorkshire; 'B.' notes that Gough's list of animals found within six or seven miles of Kendal, Westmoreland (pub. 1861), describes it as 'not unfrequent,' and adds that whatever it might have been then, its occurrence there is now very unfrequent; 'A.C.' notes that they were plentiful about ten years ago at Markington, Yorkshire; and 'Thurston' records that five were secured in the spring of 1884 at Nibthwaite, foot of Coniston Lake, by Thomas Dickinson, woodcutter.

CONCHOLOGICAL NOTE.

Freshwater Shells near Manchester.—The following is a list of the freshwater shells which I took from a pond in Baguley, Cheshire, one day in July last:—*Paludina contecta*, *Bythinia tentaculata*, *Planorbis corneus*, and *Anodonta cygnea*, all very abundant, the last-named species being buried in the mud. *Limnea auricularia*, *Limnea peregra*, and var. *ovata*, as well as *Planorbis carinatus*, were also there, but not in such numbers as the first-named species. Dyson in his book on the Land and Freshwater Shells of the Manchester District, does not mention either *Paludina contecta* or *Planorbis corneus* as occurring in this neighbourhood. I may mention that the pond in question has an area of about three-quarters of an acre, and no stream of any size enters or leaves it.—CHARLES OLDHAM, Syrian House, Sale, near Manchester, December 15th, 1884.

Naturalist,

STRASBURGER'S NEW INVESTIGATIONS ON THE PROCESS OF FERTILISATION IN PHANEROGAMS.

By THOMAS HICK, B.A., B.Sc.,

President of the Botanical Section of the Yorkshire Naturalists' Union.

THERE are few men who have done more for the advancement of botanical science during the last few years than the eminent Professor of Botany at the University of Bonn. The industry which he displays is as rare as it is exemplary, and is deserving of the grateful appreciation of all students of the science. His skill in the work of practical investigation is such as can only be described as ingenuity of the highest type, while his perception of the bearings of the results obtained upon biological problems yet unsolved, rises at times to the height of genius.

The latest addition to the list of his publications ('Neue Untersuchungen über den Befruchtungsvorgang bei den Phanerogamen, als Grundlage für eine Theorie der Zeugung.' Von Dr. Eduard Strasburger. Jena, 1884) is occupied with an account of fresh investigations into the process of fertilisation in phanerogams, as a basis for a theory of generation. That it is not less worthy of the attention of physiological botanists than his previous works goes without saying, and I therefore offer no apology for presenting a brief *resumé* of its contents to the botanical readers of the *Naturalist.* It should be remarked, however, at the outset, that by the term 'fertilisation' as here used, the reader must not understand what is sometimes meant by it, viz., the deposition of pollen upon the stigma. For this latter process the term 'pollination' is now more accurately employed, while by 'fertilisation' is meant the impregnation of the oosphere, or egg, within the embryo-sac of the ovule.

In the first section of his work, Strasburger deals with the structure of pollen grains, and the phenomena attendant upon the development of the pollen-tube. These grains were formerly thought to be simple unicellular structures, but it is now generally known that such is not always the case, except when first formed in the pollen mother-cell. In *Zamia* and *Ceratozamia*, as Juranyi has shown, the originally one-celled pollen grain—distinguished as a *progamous* cell—divides into a small vegetative cell, and a larger progamous cell of the second order. In *Zamia*, the latter again divides into a larger generative cell and a second smaller vegetative cell, while in *Ceratozamia* the differentiation is not complete until a third vegetative cell has been cut off. The two or three vegetative

cells thus successively produced, unite to form a connected cell-complex, which lies within the grain, and is strongly arched forwards into the comparatively large cavity of the generative cell. In the case of the Coniferæ, a similar vegetative cell-complex is formed in the pollen grain, and this agrees so closely with that present in the *Cycadeæ* referred to, that, as the author already mentioned has maintained, it can scarcely be supposed to have another mode of origin. Confirmatory evidence of the truth of this view is afforded by the manner in which the vegetative cell-complex is developed in the pollen grains of the Larch (*Larix europæa*). This has been carefully investigated by Strasburger himself, who finds that three vegetative cells are successively cut off from the originally one-celled pollen grain, though the two oldest of these become disorganised soon after their formation. In other Coniferæ, as in the genus *Pinus*, the differentiation is completed when the progamous cell has divided once into a small vegetative cell and a larger generative cell. With regard to the remaining group of Gymnosperms, the *Gnetaceæ*, further knowledge is desirable, but Juranyi has established the fact that in *Ephedra altissima*, a cell-complex is present in the pollen grain, and that it is produced in the same manner as in the other groups.

Hence it may be stated as a general rule, that the pollen grains of Gymnosperms are not simple unicellular bodies, but contain one comparatively large generative cell, and one or more smaller vegetative cells. To this it may be added that in Cycads and Conifers, the generative cell gives origin to the pollen-tube, while the vegetative cells become gradually shrivelled up. The same may probably be said of the *Gnetaceæ*, though definite information is wanting on this point. In the *Cycadeæ* and *Coniferæ* the nucleus of the generative cell wanders into the pollen-tube, and comes to rest near the growing end. This nucleus divides once or oftener, and each of the daughter nuclei may or may not become enveloped by a mass of protoplasm, which is limited towards the outside by an ectoplasmic layer.

By some authorities the cell-complex just described is regarded as a rudimentary prothallium comparable to that of Ferns and the *Ligulatæ*. Strasburger seems to question the validity of this view, chiefly on the ground that its mode of development is quite different from that of the so-called rudimentary prothallium of *Isoëtes* and *Selaginella*.

Coming now to ordinary flowering plants, *i.e.*, to Angiosperms, we find the progamous pollen-cell dividing into a large and a small cell, which have usually been regarded as the homologues of the generative and vegetative cells respectively of Gymnosperms. But here,

again, Strasburger finds reason to dissent from the current doctrine, and interprets the two cells differently, looking upon the small cell as the generative, and the large one as the vegetative cell. The partition between the two cells is sooner or later dissolved, and if this does not occur prior to the formation of the pollen-tube, the generative cell travels bodily into the tube, having previously separated itself from the wall of the grain. Even in the ripe pollen-grain, Strasburger is able, by the aid of staining fluids, sections, &c., to demonstrate the presence of nuclei, and can even distinguish between the nuclei of vegetative and generative cells. The nucleus of the larger cell, however, often assumes special forms at the time of maturity, and may be much reduced, though our author knows of no instance in which it becomes totally disorganised while within the grain. The nuclei of the generative and vegetative cells enter the pollen-tube, but not in an absolutely fixed order. In the majority of plants the vegetative nucleus goes first, but there are numerous exceptions. The nucleus of the generative cell always doubles itself at least, either in the pollen-grain or the tube, and, as already stated, the generative cell sometimes enters the tube as a whole. The two generative cell-nuclei formed in this way are not dissolved, but rather enter with the pollen-tube into the interior of the ovule, as does also the vegetative cell-nucleus in Monocotyledons. In the Orchideæ, for example, it is easy to demonstrate the vegetative and the two generative cell-nuclei within the tip of the pollen-tube as it enters the micropyle of the ovule, the vegetative being a little in advance of the generative. In Dicotyledons it is otherwise. Here the vegetative cell-nucleus disappears earlier or later in the pollen-tube, and only the two generative cell-nuclei enter the ovule. These facts Strasburger considers as evidence in favour of his interpretation of the nature of the two cells whence these nuclei are derived, as well as of his view that the vegetative cell-complex is not to be regarded as a rudimentary prothallium.

Having thus summarised the results of his investigations on the pollen-grains of Angiosperms, Strasburger concludes this section with a brief account of the plants he has employed, arranged in systematic order under their natural families. From this it is evident that the conclusions arrived at are based upon an extensive series of observations on plants belonging to numerous natural orders, and are therefore entitled to respect and confidence. The details given of the mode of treatment adopted in each case, and the results obtained, are, however, the most valuable feature of this summary of the plants dealt with, as they will enable all who desire to do so, to test the truthfulness of the author's statements.

(*To be continued.*)

Feb. 1885.

BOOK NOTICES.

'A Synopsis of the British Mosses: being descriptions of all the genera and species found in Great Britain and Ireland to the present date.'—By Charles P. Hobkirk, F.L.S. (Second Edition, revised, corrected, and entirely re-arranged. L. Reeve & Co., 1884.)

No department of botany has been more assiduously worked during the last two or three decades than the mosses. Every year seems to add to the number of energetic students of these interesting and elegant little plants, and increases our flora with species more or less notable and unexpected. A notion of the progress of the science of bryology cannot be better conveyed than by the simple statement that the *Muscologia Britannica* of Hooker and Taylor, published in 1818, contained descriptions and figures of 190 species, while Wilson's *Bryologia Britannica*, which, while purporting to be a new edition of the last, was in fact a work on a much larger scale, published in 1855, contained 444 mosses, and now in the volume before us the number is still further increased to 576 species.

The want of an efficient handbook on the subject has been long felt and complained of. Wilson's work, excellent in its day and likely to be always valuable, has been for some time quite insufficient, as well as out of print and difficult to obtain. We are therefore glad to see a second edition of Mr. Hobkirk's useful Synopsis. It is a great improvement on its predecessor, and a really convenient and not expensive manual, which may be recommended on its merits to all collectors, containing descriptions of all the species and most of the varieties known up to the present time, and it will be found useful even by those who possess larger works, as a companion during a country or mountain tour.

A good deal of difference of opinion as to the best method of arrangement still exists, and will probably long remain. Meanwhile the author has done wisely in adopting a known standard from Jæger and Sauerbeck's *Adumbratio*, instead of increasing confusion by aiming at the praise of originality. This arrangement harmonises sufficiently well with those of Wilson and of Schimper, from whose works he has drawn a great deal, and which would be the works an English student is most likely to meet with. It is to be regretted that a few typical figures of genera, simple in character, after the manner of Sullivant or Schimper, have not been added to the work; its value to beginners would have been thereby a good deal increased, and yet more by a short introduction explanatory of the general structure of a moss and its various parts. These seem to have been omitted from a desire to keep down the size and price of the book, which is very commendable; but three or four plates and as many extra pages ought to have added little to either, and would have given greater completeness to the work.

Some small points here and there invite complaint. Under *Sphagnum cuspidatum* one variety is given, which is very rare, but the two common varieties *plumosum* and *falcatum* are omitted, though amongst the first a collector is likely to find, and under other species all the varieties are given. *Hymenostomum commutatum* and *Gymnostomum curvirostrum* appear in different genera, for which there seems no reason; even their specific difference not being very clear (p. 59). *Campylopus Schwarzii* is the usual form; not *Swartzii* (p. 78). *Phascum* or *Sphærangium muticum* is by no means confined to the seaside, but occurs in sandy fields in the midland counties (p. 93). *Ulota crispa* has the capsule contracted *below* the wide-gaping mouth—its most conspicuous character; but this is missed, and mis-stated as 'contracted at mouth,' just as *U. Bruchii* (p. 132). *Neckera Philippeana* is found in Berks., Sussex, etc., as well as in the localities given (p. 186). *Hookeria lætevireus* is restricted to Cornwall and the Killarney region, etc.; not usual in caves as seems to be implied (p. 188). The insertion of a comma after the word apical, in the fifth line of page 221, makes nonsense of the sentence, and this is the more noticeable as the book is generally so free from typographical errors, and as correctly as it is handsomely printed. The finding of *Hypnum dilatatum* in Berkshire (p. 227), seems rather questionable, to say the least.

But these are little matters, and do not mar the general usefulness of a book

which may be cordially commended to all who desire to become better acquainted with this fascinating family of plants; and when a third edition is called for, as we hope will soon be the case, perhaps the author may adopt some of the hints we have given for its improvement.—H. B.

NOTES AND NEWS.

The Sheffield Naturalists' Club, at its annual meeting on the 9th of December, chose our old friend Dr. H. Clifton Sorby, F.R.S., as their president for 1885. The Rev. W. H. Dallinger, F.R.S., and Mr. Edward Birks are the new vice-presidents, and Mr. Arnold T. Watson treasurer, while for the seventh year in succession Mr. J. Charles Burrell is honorary secretary. Messrs. A. H. Allen, F.I.C., G. Hann, W. G. Roper, A. Scargill, W. H. Walker, jun., and W. H. Watson complete the Committee. The report showed that the membership was stationary, and the balance-sheet was satisfactory.

The Club had to deplore two serious losses in the sudden deaths of Amos Carr and John A. Blaydes. The loss of the former we have already noted. The latter was well acquainted with the geological features of the district, and had formed a most extensive collection, which we are happy to note has been purchased for the Sheffield Public Museum.

The thirteenth annual report of the Sheffield Naturalists' Club gives a list of plants which the Club has presented to the Public Museum of that town, all of which were preserved and mounted by the late Amos Carr. It is gratifying to find that the collections of so able a botanist should be preserved by the town whose scientific history they will so well serve to illustrate.

Mr. Algernon F. Gissing, of Agbrigg, near Wakefield, who has lately presented to the library of the Yorkshire Naturalists' Union a copy of his late father's 'Materials for a Flora of Wakefield and Neighbourhood,' reprinted from the *Naturalist* for 1867, would be glad to have additional notes, whether of species or localities, to render it more complete.

The fifteenth annual meeting of the Leeds Naturalists' Club was held on the 11th of December. A satisfactory report and balance-sheet were presented, and the officers for 1885 elected, Mr. H. B. Hewetson being chosen as president.

At the annual meeting of the Huddersfield Naturalists' Society, the officers for the ensuing year were elected as follows:—President, Mr. A. Clarke; vice-presidents, Messrs. A. Godward and T. W. Woodhead; treasurer, Mr. A. J. Whiteley; corresponding secretary, Mr. S. L. Mosley; financial secretary, Mr. C. Wall; curator, Mr. F. Ellis; librarian, Mr. H. Howard; committee, Messrs. J. Beaumont, J. Tindall, J. H. Bartlam, E. Fisher, S. Kaye, G. H. Crowther, A. Midwood, and W. Balmforth: botanic gardens sub-committee, Messrs. Clarke, Mosley, Bartlam, Woodhead, Fisher, Godward, Wall, and Beaumont. Recorders: Botany, Mr. Woodhead; mycology, Mr. Clarke; entomology, Mr. Mosley.

Entomologists who take interest in the fascinating study of variation in Lepidoptera, will be glad to learn that Mr. W. F. de V. Kane, of Sloperton Lodge, Kingstown, Co. Dublin, the author of the paper on 'Variation in European Lepidoptera' in our November number, proposes to publish further papers on the same subject, dealing particularly with a small portion of the field traversed by that paper. To help him in this task, he would be glad if Entomologists would furnish him with notes or references bearing upon the following points:—(*a*) Instances of variation among macro-lepidoptera tending to connect any one species with another—*e.g.*, the markings of *Lycæna icarus* approximating to the character marks of *L. adonis* (*bellargus*), or other Lycænidæ. (*b*) Any suggestions concerning the genesis of sexual differences, and as to whether it is the male or the female which has deviated from the original type. (*c*) Notes on protective colouring or protective habits among the macro-lepidoptera, especially the butterflies.

The science of Biology and the theory of Evolution have through the labours of Mr. W. H. Caldwell, the first Balfour scholar, lately become possessed of what may be termed some highly important truths so far as the former is concerned, while a link of the greatest value has been added to the chain supporting the latter. Mr. Caldwell, who is stationed in Australia for the purpose of studying the embryology of the monotremes, has had the good fortune to prove what was long suspected to be the case by the venerable Owen, namely, that these lowest of the lowly mammals are oviparous, laying eggs with a strong, white, and flexible shell! *Ornithorhynchus* lays two such eggs in a nest at the end of its burrow; while *Echidna* lays a single egg, which is carried in its ventral pouch. Thus the Mammalia may now be said to merge with more easy gradations into the Reptilia than was formerly supposed to be the case.

We have before us the 'Records and Observations' of the Rotherham Naturalists' Society, No. 1 (July 1884), which includes several papers of interest, most of which will be duly noted in our Bibliographical Review for 1884, dealing, as they do, with the natural history of the North of England. The pamphlet is well and neatly printed, and does much credit to the Society.

RAINFALL FOR DECEMBER 1884.

STATION & OBSERVER.	Height of Rain-Gauge above Sea-level.	Total Rainfall for Month.	No. of Days on which Rain fell.	Total Fall to Date.				Heaviest Single Day's Fall.	
				In 1884.	Average of Past Years.	No. of Years.	Years of Average.	Amount.	Date.
	Feet.	Inches	Days	Inches.	Inches.	No.	Years.	Inches	
Derringham, Hull. Wm. Lawton	10	2·51	18	18·11	23·13	34	1850-83	0·37	19th.
Goole.—John Harrison...	25	1·45	13	18·24	26·98	9	1875-83	0·29	19th.
Wetwang, The Wolds. Rev. E. Maule Cole	235	2·78	18	23·24	—	—	—	0·47	18th.
Scarborough.— Allan Rowntree	130	2·05	19	21·36	29·15	18	1866-83	0·41	19th.
Baldersby, Thirsk.— W. Gregson	100	1·92	16	25·43	—	—	—	0·33	18th.
Masham.—Thos. Carter..	269	3·83	23	29·35	—	—	—	0·80	16th.
Shadwell, Leeds.— Geo. Paul	500	2·29	20	25·10	—	—	—	0·30	7th.
Leeds.—The Museum ...	183	2·71	23	23·05	24·92	30	{1853-62 / 1865-84}	0·43	19th.
Horsforth.—James Fox	350	2·49	21	24·88	32·39	15	1870-84	0·31	7th.
Barnsley.—Dr. Sadler...	350	2·00	18	21·28	33·01	5	1880-84	0·41	4th.
Wentworth Castle. Wm. Fisher	520	2·68	19	23·34	33·51	8	1877-84	0·56	4th.
Ingbirchworth.— J. H. Taylor	853	5·12	21	33·21	42·58	13	1872-84	0·79	4th.
Dalton, Huddersfld. J. W. Robson	350	3·64	17	25·91	33·93	18	1866-83	0·53	14th.
Thorpe, Halifax.— F. G. S. Rawson	365	7·02	20	41·66	—	2	1882-83	0·92	4th.
Tuxford, Notts. — Grammar School, J. N. Dufty.	220	1·34	14	18·41	30·45	8	1876-83	0·37	14th.

THE LEPIDOPTEROUS FAUNA OF LANCASHIRE AND CHESHIRE.

By JOHN W. ELLIS, L.R.C.P., L.R.C.S.E.,
Liverpool; *Hon. Sec. Lancashire and Cheshire Entomological Society.*

One of the main factors which determine the geographical distribution of phytophagous insects being the presence or absence of the plants upon which they subsist during a portion, if not the whole, of their existence, and as the flora of a district depends very largely upon the geological formation and meteorological conditions of that district, an apology is scarcely needed for referring very briefly to these conditions as they exist in the counties of Lancashire and Cheshire, before commencing a list with localities of the lepidopterous fauna of these counties.

Exposed as they are to the prevailing warm and moisture-laden south-westerly winds, and washed as a portion of each county is by the waters of the Irish Sea, the average yearly temperature is always several degrees higher, and the annual rainfall from 10 to 20 inches greater, than that of the corresponding east coast of England. Throughout Lancashire, with the exception of the extreme north, where the rainfall is somewhat higher, the amount of rain varies between 30 and 40 inches yearly, while over the whole of Cheshire the average is between 20 and 30 inches.

The two principal geological formations met with belong to the Triassic and Carboniferous periods; the former, including the series of New Red Sandstones, occupying the whole of Cheshire west of Stockport, and the western half of Lancashire, including the Preston and Fylde districts, but not including the extreme north, to be afterwards alluded to.

The Carboniferous system, chiefly the upper and lower coal measures and the millstone grit, extends over the eastern half of Lancashire, forming the great coalfield of this county, and the extreme east of Cheshire is also occupied by a continuation of the same beds. Only in the north of Lancashire, in the neighbourhood of Grange, and in the extreme north-east, does the mountain limestone appear; and, as will be afterwards seen, the district of Grange assimilates more closely in its entomological fauna to the south of England than does any intervening district.

Through a large portion of both counties the Western Trias is separated from the Eastern Carboniferous series by a narrow strip of Permian Limestone, nowhere more than a mile in breadth, and stretching due north and south through Stockport and a few miles east of Manchester. In most places the new red sandstone is

Feb. 1885.

covered to a variable depth by a bed of clay containing boulders grooved by glacial action, and the remains of marine shells similar to, if not identical with, those which at present inhabit the seas of the neighbourhood.

The remaining features of the district which affect its flora, and therefore its lepidopterous fauna, are speedily dismissed. With the exception of Delamere Forest, lying between Chester and Northwich, there are no large tracts of woodland, and what woods there are are comparatively of recent growth, and usually so devoted to the preservation of game that an entomologist speedily receives peremptory orders to quit. The large tracts of moss-land known locally as 'mosses' contribute a fair share to the fauna of Lancashire, but perhaps no physiographical feature of the two counties has such an influence in swelling the list of their lepidoptera as the tract of sandhills, with a fauna and flora *sui generis*, which stretch from the Ribble to the Mersey, and from the Mersey to the Dee.

In compiling the Lepidopterous Fauna of Lancashire and Cheshire, I have to acknowledge the kind assistance of the following gentlemen, whose names are abbreviated in the body of the work as follows:—

N.C.—Mr. Nicholas Cooke, Liscard.
H.H.C.— ,, H. H. Corbett, Levenshulme.
J.C.— ,, Joseph Chappell, Manchester.
S.J.C.— ,, S. J. Capper, Huyton.
W.G.— ,, Willoughby Gardner, Liverpool.
H.H.H.—Rev. H. H. Higgins, Rainhill.
J.B.H.—Mr. J. B. Hodgkinson, Preston.
W.J.— ,, William Johnson, Liverpool.
J.C.M.— ,, J. C. Melvill, Prestwich.
S.L.M.— ,, S. L. Mosley, Huddersfield.
F.N.P.— ,, F. N. Pierce, Liverpool.
G.T.P.— ,, G. T. Porritt, Huddersfield.
E.S.— ,, Edmund Shuttleworth, Preston.
A.O.W.— ,, Alfred O. Walker, Chester.

I have also derived considerable information from the following books, pamphlets, and periodicals:—

British Butterflies and Moths, by the Rev. F. O. Morris.

British Butterflies and Moths, by Edward Newman.

Lepidoptera of Wirral, by J. F. Brockholes* (Trans. Lit. and Phil. Soc. of Liverpool, 1864).

Lepidopterous Insects of the district round Liverpool, by Charles S. Gregson* (Trans. Hist. Soc. of Lanc. and Ches., 1855 to 1858).

* Abbreviated J.F.B., and C.S.G., in the body of the work.

The Entomologist.
The Entomologists' Monthly Magazine.
The Entomologists' Weekly Intelligencer.
The Zoologist.
The Young Naturalist.
Illustrations of Varieties of Lepidoptera, by S. L. Mosley.

RHOPALOCERA.

Fam. *PIERIDÆ*.

LEUCOPHASIA, Steph.

Leucophasia sinapis, L. **Wood White.**

Very local in both counties, but tolerably common where it does occur.

Lanc.—Grange, abundant (E.S.; J.B.H. in litt. and Ent. Mo. Mag., viii. 62); Manchester, one from Clifton Wood (F.N.P.).

Ches.—Dunham Park (J.B.H., Intell. 1859, vol. ii., 101). Mr. Gregson also records this species from a plantation between Hooton Station and Mollington.

EUCHLOE, Hübn.

Euchloe cardamines, L. **Orange-tip.**

This species, usually so common in the south, is somewhat local in its distribution, although more abundant in Cheshire than in Lancashire. Localities noted are as follows:—

Lanc.—Grange, abundant (E.S.); Silverdale, abundant (J.C.M.); fairly common in low-lying meadows between the coast and Ormskirk, and between Allerton and Hale (C.S.G.); Bolton, fairly common (W.J.); Preston, scarce (J.B.H.); Rainhill, very scarce (H.H.H.).

Ches.—Chester district, common (A.O.W.); throughout Wirral, as at Raby, Stourton, and Barnston (W.G.), and Bromborough (J.W.E.); the Bollin and Glazebrook valleys (J.C.); Delamere (S.J.C.); while it is local about Cheadle Hulme and Alderley (H.H.C.).

In Mosley's Illust. Var. Lepidoptera are figured two aberrations of this species captured in Lancashire, the one, a very dwarf specimen (Part III., Anthocharis, pl. i., fig. 5) taken by S.L.M. at Arnside in 1877, the other (Part XIV., Anthocharis, pl. ii., fig. 6) in coll. C.S.G., and taken by him at Southport, in which the ground colour of the wings is pale yellow.

PIERIS, Schrank.

Pieris napi, L. **Green-veined White.**
Pieris rapæ, L. **Small Cabbage White.**
Pieris brassicæ, L. **Large Cabbage White.**

All these species are abundant throughout both counties, but much more so in Cheshire and South Lancashire than in North Lancashire.

COLIAS, Fabr.

Colias hyale, L. **Pale Clouded Yellow.**

Mr. Chappell informs me that this species was captured at Bury by Mr. Robert Kay; in Stainton's Manual it is recorded as having occurred in the Manchester district.

Colias edusa, Fab. **Clouded Yellow.**

Of very irregular appearance in the two counties, as indeed is the case over the greater part of England. During the so-called 'Edusa years,' the latest of which was 1877, the butterfly seems to be generally distributed throughout both Lancashire and Cheshire.

Lanc.—Bolton (W.J., Intell., 1858, i., 195); Bury (R. Kay, Ent., x., 190); Crosby, abundant in 1877 (J.W.E.); Grange, freely at times (J.B.H.); Huyton, one specimen (S.J.C.); Lancaster, in 1869 (J.B.H., Ent. Mo. Mag., vi., 114); Liverpool, in Pigue Lane, in 1847 (C.S.G., Zool., vi., 2032); Manchester, in June 1877 (F. Kenderdine, Ent. Mo. Mag., xiv., 64); Middleton, abundant in 1877 (J. Thorpe, Ent., x., 190); Southport, one in 1869 (R. Kay, Ent., iv., 351), and in 1877 (G. Eastham, Ent., x., 190); Ulverstone, one in 1858 (J. Kirby, Intell., 1858, i. 171).

Ches.—Alderley, one in 1868, taken by W. W. Keyworth (H.H.C.); Bollin Valley, several in 1869 (J. R. Hardy, Ent. Mo. Mag., vi., 114); Chester district, rather common in 1859 and 1877 (A.O.W.); Delamere, one in 1878 (J.C.M.); Handforth, common in 1877 (H.H.C., Ent., ix., 256); Liscard, taken freely by Mr. Leather in 1877 (J.W.E.); New Brighton, taken by Mr. Cauty in 1847 (C.S.G., Zool., vi., 2032); Stourton, common in 1877 (W.G.); Wallasey Sandhills, in 1877 (J.W.E.).

The pale variety of the female (**Helice**, Hübn.) has been taken several times, of which I find the following records:—

Crosby, a single specimen captured in 1877 by Thomas West, and recorded in Trans. Lanc. and Ches. Ent. Soc., 1877; Birkenhead district, a specimen taken by Mr. William Lello in August 1868 (Ent. Mo. Mag., v., 129, and Ent., iv., 145); Stourton, one in 1877 by W. Gardner (in litt.).

GONEPTERYX, Leach.

Gonepteryx rhamni, L. **Brimstone.**

Occurs sparingly throughout both counties, but nowhere plentiful.

Lanc.—Bolton, occasionally (W.J.); Grange, not rare (J.B.H.); Hale, taken by Mr. Nixon (C.S.G.); Rainhill, two females many years ago (H.H.H.); Silverdale (J.C.M.).

Ches.—Alderley, one in 1867 (H.H.C.); Beeston Castle and Chester, taken by Mr. Geo. Day (A.O.W.); Bidston, one in 1875 (W.G.); Bowden, Bollin Valley, and Lindow Common, rare (J.C.); Cheadle Hulme, one in 1868 (H.H.C.); Delamere Forest, taken by Mr. F. Leather (A.O.W.), also recorded from thence by C.S.G. (Ent., vi., 452) and J.C.M. (in litt.); Upton, where it was seen by Mr. Almond (J.F.B.).

Fam. *NYMPHALIDÆ.*

VANESSA, Fab.

Vanessa atalanta, L. **Red Admiral.**

Tolerably common throughout both counties, though much more frequent in some seasons than others.

A beautiful aberration of this species, having the central band of the forewing almost obliterated, and which was captured near Oldham by Mr. Joseph Chappell, is figured in Mosley's Varieties, Part XIII., Vanessa, pl. vii., fig. 1. The specimen is now in the collection of Mr. Joseph Sidebotham.

Vanessa antiopa L. **Camberwell Beauty.**

This scarce but extremely beautiful butterfly has been a pretty frequent visitor to both counties. So far as I am aware, the following list comprises all the specimens recorded in our periodical literature:—

Lanc.—Bolton, a specimen was captured in 1857 and recorded (Intell., 1857, vol. i., 190) by Mr. W. Johnson, who informs me that another specimen was captured and several others seen during that year in the same neighbourhood; Bury, in 1872 (R. Kay, Ent., vi., 410); Grange (J.B.H.); Heywood (near), in 1880 (J. W. Bentley, Ent., xiii., 277); Kersall Moor, one specimen (J.C.M.); Knotty Ash, near Liverpool, a specimen in 1873 (E. P. Thompson, Ent., vi., 410); Liverpool (in the town of), in 1873 (H. Durnford, Ent., vi., 410); Longridge (J.B.H.); Lytham (J.B.H., Intell., 1859, vol. ii., 101); Ribchester, a specimen in 1872 (A. G. Lathom, Ent., vi., 216); Rivington Pikes, about 1855, the specimen in coll. R. S. Edleston (Intell.,

1859, ii., 47); Staley-brushes (J.C.); Ulverston (J.B.H.).

Ches.—Altrincham, a specimen taken by Mr. Keyworth (H.H.C.); Birkenhead, one near Prenton Mount (J.F.B.); Delamere, in 1872, taken by Mr. F. Leather (A.O.W.); Macclesfield Forest, one captured by Hugh Harrison, September 1858 (Intell., 1859, ii., 47); Neston, in 1872 (J.F.B., in Ent., vi., 410).

Vanessa io, L. **Peacock.**

While in Cheshire this insect seems tolerably common, though nowhere so abundant as in the south of England, there is a unanimous opinion among my correspondents that while formerly abundant, it has become much scarcer throughout Lancashire during recent years.

Vanessa urticæ, L. **Small Tortoise-shell.**

Common all over both counties, though, like all of the genus, not so abundant as formerly.

Mr. Gregson records (Ent., iii., 209) a specimen captured at Hawkshead, in which the two spots on the disc of the forewing are absent, thus resembling the Corsican species (variety ?) **Ichnusa**, Bon. This variety seems very scarce in Britain.

Vanessa polychloros, L. **Large Tortoise-shell.**

Brunswick Road, Liverpool, one specimen (N.C.); Red Scar, near Preston (Newman's British Butterflies); of more frequent occurrence in Cheshire, of which I possess the following records:—

Acton Bridge, taken by James Hirst (J.C.); Alderley, two, one in 1869, one in 1870 (H.H.C.); Chester, in 1859 (J.B.H., in Intell., 1859, vol. ii., 101); Delamere, near the Lodge-gates at Petty-pool (R. Brown); Eastham (E. Birchall in Newman's Butterflies); Prenton Wood (J.F.B.).

Vanessa C-album, L. **Comma.**

Very local, and not common where it does occur.

Lanc.—Bolton, rare (W.J.); Chat Moss, occasionally (J.C.); Hale and Woolton, occasionally (C.S.G.).

Ches.—Bebington, in 1873 (W.G.); Chester (A.O.W.); Delamere (A.O.W. and J.C.M.); Hooton (C.S.G.); Tranmere, Ness, and Puddington (J.F.B.).

Vanessa cardui. L. **Painted Lady.**

Occurs occasionally, and at uncertain intervals, over both counties; a few are to be found nearly every year on the coast sandhills. During last summer (1884) the larvæ have occurred in profusion on the sandhills beyond Crosby.

A 'wonderful variety' of this species—now, I believe, in the cabinet of Mr. C. S. Gregson—was captured at Wallasey by Mr. E. L. Ragonot, and recorded by him (Ent. Mo. Mag., v., 129).

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Contents:

PAGE

The Lepidopterous Fauna of Lancashire and Cheshire—*John W. Ellis, L.R.C.P., etc.* 169
(Part I., Butterflies, concluded).

Strasburger's New Investigations on the process of Fertilisation in Phanerogams—
Thomas Hick, B.A., B.Sc. (continuation) 175

Note on an Abnormal Deposit of Drift Coal in North Durham—*Professor G. A. Lebour, M.A., F.G.S.* 179

Ornithological Note:— 182
Breeding of the Reed Warbler in Cheshire—*Eds.*

Ichthyological Note:— 180
Whitby Notes—*Thomas Stephenson.*

Conchological Notes:— 181
Bulimus acutus—*T. D. A. Cockerell*; Bulimus acutus in South Wales—*Edward Collier*; Mussels Eaten by Animals and Birds—*C. T. Musson.*

Notes on Lepidoptera:— 174
Lepidoptera near York in 1884—*Thomas Wilson*; Satyrus tithonus in Lincolnshire—*H. W. Kew.*

Botanical Notes:— 178
Plants of the Bradford District—*H. T. Soppitt and W. West*; Corallorhiza innata in Northumberland—*T. W. Maclagan, M.D.*

Book Notices:— 182
Pascoe's List of British Vertebrate Animals; Lang's Systematic List of the Butterflies of Europe.

Notes and News .. ..182 to 184

Bibliography of 1884 (Part II., Birds) .. ..185 to 192

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BOOKS RECEIVED.

Revue Bryologique (edited by T. Husnot), 1885—No. 1. [The Editor.
Barnsley Naturalists' Society.—Quarterly Transactions, 1884, part 2. [Society.
Midland Naturalist, Nos. 85 and 86, Jan. and Feb. 1885. [The Editors.
Naturalists' World, Nos. 13 and 14, Jan. and Feb. 1885. [The Editor.
Bradford Naturalists' Society.—Diary of Nat. Hist. Obs. for 1884. [The Editors.
Belfast Naturalists' Field Club, Annual Report, 1883-1884. [The Club.
Geology of Parish of Lenton, Notts.—J. Shipman, 1884, 8vo. rep. 53 pp. [Author.
Science Gossip.—Feb. 1885. [The Editor.
Natural History Journal and School Reporter, Feb. 15th (York). [Editor.
South London Entomological and Nat. Hist. Society—Report for 1884. [Society.
Hertfordshire Nat. Hist. Society: Trans., vol. 3, pt. 3 (Dec.), pt. 4 (Feb.). [Society.
The Illustrated Science Monthly for Feb. 1885. [David Bogue.

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MELITÆA, Fabr.

Melitæa aurinia, Rott. = **artemis**, S.V. **Greasy Fritillary.**

Local, and not usually common where it does occur.

Lanc.—Bolton, occasionally (W.J.); between Maghull and Lydiate, plentiful (C.S.G.); one at Rainhill (H.H.H.); Warrington (N.C.).

Ches.—Ashley Meadows, formerly (J.C.M.); Eastham, one specimen taken by S. Archer (J.F.B.); Knutsford, common (J.C.); Malpas, abundant, but local (A.O.W.); Stockport, abundant in 1845 (R. S. Edleston, Zool., 1845, 1220).

In Mosley's Varieties (Part XII., Melitæa, pl. i., fig. 3) is a large and peculiar variety taken at Knutsford, in the collection of Mr. Sidebotham.

Melitæa athalia, Esp. **Pearl-bordered Likeness Fritillary.**

Recorded from Marple by J.B.H. (Intell., 1859, vol. ii., 101).

ARGYNNIS, Fab.

Argynnis selene, W.V. **Small Pearl-bordered Fritillary.**

Scarce. Grange (J.B.H.); Silverdale (J.C.M.); Delamere Forest (J.C. and J.C.M.).

Mr. F. Bond has a specimen taken at Macclesfield, which has the spots almost entirely obliterated (Mosley's Varieties, Part V., Argynnis, pl. iv., fig. 5).

Argynnis euphrosyne, L. **Pearl-bordered Fritillary.**

Local, but abundant where it does occur.

Lanc.—Abundant at Grange (J.B.H. and E.S.) and at Silverdale (F.N.P. and J.C.M.).

Ches.—Delamere Forest (J.C. and J.C.M.); Bromborough Woods (C.S.G.).

Argynnis niobe, L.

This species, which by many entomologists is denied a place in the list of British Butterflies, was captured by Mr. C. S. Gregson at the 'Devil's Gallop' on the Lancashire side of Windermere, in August 1871 (recorded Ent., viii., 84, and Y.N., i., 407).

Argynnis adippe, L. **High Brown Fritillary.**

Common on the Lancashire side of Windermere (J.B.H.); Silverdale (J.C.M.) and Grange (S.J.C.).

Argynnis aglaia, L. **Dark Green Fritillary.**

Fairly common, but almost confined to the coast sandhills of both counties.

Lanc.—Crosby (J.W.E.); Formby (F.N.P.); Southport (J.C.M.); and Blackpool (J.C.); Windermere, common (J.B.H.).

Ches.—Formerly common on the New Brighton and Wallasey sandhills (J.F.B. and C.S.G.).

Mr. Edleston records a specimen of the variety **Charlotta**, Haw., which 'has the silvery spots near the base of the wing much larger, two pairs of them coalescing,' captured at Blackpool in 1843 (Zool., ii., 399); Mr. Gregson (Ent., iii., 209) also records three specimens of this variety from Bootle.

Argynnis paphia, L. **Silver-washed Fritillary.**

Delamere, common (J.C.M.); said to have occurred near Bolton (J.C.).

Fam. *SATYRIDÆ*.

HIPPARCHIA, Fab.

Hipparchia semele, L. **Grayling.**

Abundant on all the coast sandhills from the Dee to Southport. Bidston Hill, abundant (J.F.B. and J.W.E.); formerly abundant in the Cheadle-Hulme district, but very local at Bramall, and not seen there since 1868 (H.H.C.); Grange (J.B.H.).

EREBIA, Dalm.

Erebia æthiops, Esp. = **medea**, Hübn. = **blandina**, Fab. **Scotch Argus.**

Abundant at Silverdale (S.J.C.); Grange (J.B.H.); recorded from Colne, near Burnley (J.B.H., Intell., 1859, ii., 101).

MELANARGIA, Meig.

Melanargia galathea, L. **Marbled White.**

Recorded from Preston, in his 'British Butterflies' by the Rev. F. O. Morris, but I know not on what authority.

SATYRUS, Latr.

Satyrus megæra, L. **Wall.**

Common, and generally distributed—except in the Manchester district, where (J.C.) it is not nearly so common as formerly, and about Cheadle-Hulme, where it is very scarce (H.H.C.).

Satyrus ægeria, L. **Speckled Wood.**

Generally distributed, but apparently nowhere common.

Lanc.—Bolton (W.J.); Grange (J.B.H. and E.S.); and Silverdale (J.C.M.)

Ches.—Delamere (J.C.M.); occasionally in the wooded parts of Wirral (J.F.B. and C.S.G.)

EPINEPHILE, Hübn.

Epinephile hyperanthus, L. **Ringlet.**

Local, and not common where it does occur.

Formerly common at Turton, near Bolton (W.J.); Botany Bay Wood and Worsley (J.C.); Grange (J.B.H.); Silverdale and Delamere (J.C.M.).

Epinephile janira, L. **Meadow Brown.**

Abundant throughout both counties.

Epinephile tithonus, L. **Large Heath.**

With the exception of the Cheadle-Hulme district, where it seems absent (H.H.C.), and the Chester district, where it appears not common (A.O.W.), this species is tolerably plentiful in both counties, being especially abundant near the coast, as at Lytham (J.B.H.), Fleetwood (S.L.M.), West Kirby and Bidston (J.W.E.).

CÆNONYMPHA, Hübn.

Cænonympha pamphilus, L. **Small Heath.**

Common and generally distributed, except in the district of Cheadle Hulme, where it seems to be absent (H.H.C.).

Cænonympha typhon, Rott. = **davus**, Fab. **Marsh Ringlet.**

Common on all the mosses of Lancashire and Cheshire, as, *e.g.*, Chat, Risley, and Rixton mosses (J.C.); Simmonswood Moss (C.S.G. and F.N.P.); Lindow Moss (H.H.C.); Oak-mere, and other meres in the neighbourhood of Delamere Forest (W.G. and A.O.W.); and Carrington Moss (J.C.M.).

The insect which occurs in all these localities is, I believe, exclusively the darker coloured race, with large distinct eyes, known as the var. **philoxenus**, Esp. = **davus** of Kirby's European Butterflies, and **rothliebii** of Newman's British Butterflies.

Fam. *ERYCINIDÆ*.

NEMEOBIUS, Steph.

Nemeobius lucina, L. **Duke of Burgundy Fritillary.**

Very local. Abundant at Grange (J.B.H. and E.S.); Silverdale (J.C.M.); once taken between Eastham and Hooton (C.S.G.).

Fam. *LYCÆNIDÆ*.

POLYOMMATUS, Latr.

Polyommatus minima, Fuessly = **alsus**, W.V. **Little Blue.**

Very local.

Lanc.—Grange, common (W.G. and E.S.); Silverdale (J.C.M.); between Rainhill and Ditton, several specimens (C.S.G.).

Ches.—Neston (C.S.G.).

Polyommatus argiolus, L. **Azure Blue.**

Local, but usually common where it does occur.

Lanc.—Grange, common (W.G. and E.S.); Silverdale (J.C.M.); Hale, taken by Mr. Nixon (C.S.G.).

Ches.—Delamere (N.C.); Eastham and Hooton, taken by Mr. T. Harris (C.S.G.).

Polyommatus corydon, Poda. **Chalk-hill Blue.**

Recorded from Silverdale (J.B.H.), and from Grange by the Rev. F. O. Morris in his 'British Butterflies.'

Polyommatus icarus, Rott. = **alexis**, W.V. **Common Blue.**

Very abundant on the coast sandhills, as at Crosby, Wallasey, &c. Common about Grange and Silverdale (J.B.H. and J.C.M.). Common throughout Wirral, and in Delamere Forest, but scarce near Cheadle-Hulme, from whence Mr. Corbett reports having seen only about five specimens in seventeen years.

I have taken the variety **icarinus**, Scrib., on the sandhills, where it is probably not rare. It differs from the type in having the space between the central spot on the under side of the fore-wing, and the base quite devoid of spots.

Mr. Mosley figures (Varieties, Lycæna, pl. iii., f. 5) a fine variety taken by himself at Fleetwood, and Mr. Thorpe records (Ent., iv., 132) a gynandromorphous specimen from Middleton.

Polyommatus astrarche, Bergstr. = **medon**, Esp. = **agestis**, Hübn. **Brown Argus.**

Common at Silverdale (S.L.M. and J.C.M.); Grange (J.B.H.); Chat Moss, local (R. S. Edleston, Zool., i., 112).

Polyommatus ægon, W.V. **Silver-studded Blue.**

Very local, but usually common where it occurs. Chat Moss (J.B.H. and J.C.); Barton Moss (J.C.); Alderley, very rare (W. W. Keyworth); Bidston Hill, abundant, but local (J.W.E.); Delamere, common (J.C.M. and A.O.W).

LYCÆNA, Fab.

Lycæna phlæas, L. **Small Copper.**

Abundant throughout both counties. The white variety—**Schmidtii**, Gerh.—occurs very rarely.

ZEPHYRUS, Dalm. (Thecla).

Zephyrus betulæ, L. **Brown Hair-streak.**

Grange (J.B.H. and A. Mason, Intell., 1860, i., 187); Silverdale, a specimen in 1868 (J.C.M.).

Zephyrus quercus, L. **Purple Hair-streak.**

Lanc.—Grange (J.B.H.); near Stoneyhurst (J.B.H., Ent., xii., 204).

Ches.—Delamere Forest, common (J.C., J.C.M., and A.O.W.); Edge Hall, taken by the Rev. C. W. Dod (A.O.W.). Bred from a larva found in Eastham Wood (J.F.B.); taken beyond Eastham (C.S.G.).

THECLA, Fab.

Thecla rubi, L. **Green Hair-streak.**

Local, but usually common where it occurs. Grange (J.B.H.); Silverdale (J.C.M.); Hale and Lydiate, Sutton and Hargreave Hall (C.S.G.); Lindow Common and Trafford Park, rare (J.C.); Delamere (S.J.C.).

Fam. *HESPERIDÆ.*

HESPERIA, Fab. (*Syrichthus*, Boisd.)

Hesperia malvæ, L. = **alveolus**, Hübn. **Grizzled Skipper.**

Only recorded from one locality, viz.:—Silverdale (J.C.M.).

NISONIADES, Hübn. (*Thanaos*, Boisd.)

Nisoniades tages, L. **Dingy Skipper.**

Abundant about Grange (J.B.H. and E.S.); Silverdale (J.C.M.); Chat Moss (J.C.); common on railway banks in Wirral, as between Spital and Bromborough (J.W.E.).

PAMPHILA, Fabr.

Pamphila sylvanus, Esp. **Large Skipper.**

Grange (J.B.H.); Silverdale (J.C.M.); Chat Moss (J.C.); Simmonswood Moss (C.S.G. and J.W.E.); Crosby Sandhills (C.S.G.); Knutsford (J.C.); throughout Wirral (J.F.B.).

Pamphila linea, W.V. **Small Skipper.**

Only recorded from one locality in Lancashire, viz., Silverdale (J.C.M.). Generally distributed over Cheshire, *e.g.*, Alderley, once in 1873 (W. W. Keyworth); Delamere Forest, near Oakmere, common (J.C.); near Eastham, by S. and F. Archer (J.F.B.); local at Sutton, and one specimen at Raby-mere in 1874 (W.G.).

NOTES ON LEPIDOPTERA.

Lepidoptera near York in 1884.—I send you a few notes of my doings during 1884, which I hope will interest some of your readers. *Macroglossa stellatarum* does not visit this locality every season. It may therefore be worth putting on record that I noticed one example, and had a second given to me which had flown into a dwelling-house in this neighbourhood. *Orgyia gonostigma.* I secured a few larvæ of this species in Askham bogs. From these I bred male and female ; they paired ; and from them I had a batch of eggs, which hatched in due course, and from which I have some two or three hundred larvæ hybernating. *Drepana falcataria* has been rather common in the larval state this season, on birch, in Askham bogs. *Amphydasis strataria* from a gas lamp. *Tephrosia crepuscularia* from the bole of an oak. *Geometra papilionaria.* I was successful in beating from some hazel bushes a female, which laid a supply of eggs; these hatched, and the little fellows fed well enough until they passed their second moult, when they stopped feeding, and showed signs of hybernating. This is a very difficult process for the breeder, as I know by experience, having had several clutches through my hands. It has always been the case that when feeding time comes round again their numbers were sadly diminished. It must be owing to the delicate nature of the larvæ. *Eupithecia valerianata.* In one of my rambles after insects, I accidentally met with a batch of the larvæ of this species. Having had a good two hours' beating after them I was just turning to return home when I pulled a handful of the valerian, and lo ! to my surprise, several larvæ were amongst it. I had often before looked for it, but always without avail. After this I worked well for it, and was highly pleased with the results.

The Tortrices have not met with that attention which they deserve, owing to the greasy nature of the imagos after being set. I have, however, taken a few *Penthina corticana* and *P. ochroleucana*, which two species I met with by beating. *Tortrix viridana* was exceptionally abundant, and stripping the oaks of their leaves. Of *Tortrix costana* I bred several fine varieties from larvæ found feeding on *Iris pseudacorus* in Askham bogs. *Ephippiphora similana* I bred from larvæ beaten out of birch. *Stigmonota germarana* I found amongst my captures. On referring to Mr. Porritt's 'Yorkshire List,' I find that this species has not been recorded from York before. *Eupœcilia nana*, found here for the first time ; a new record for York. *Hedya servillana.* Being in Askham bogs in May, beating for lepidoptera and hymenoptera, I turned this insect up amongst sallows. It is new to Yorkshire, as I do not find it mentioned in Mr. Porritt's list. *Pyrodes rheediana* I turned up amongst hawthorn by beating ; not recorded from York before.

Of the interesting group Tineæ, I met with a few which I had not previously turned up in this locality. *Fumea intermediella.* Beat a case of this species out of birch in Askham bogs. *Lampronia prælatella*, in the middle of the day in an orchard, at rest on a plum-leaf. *Incurvaria muscalella*, rather common ; by beating amongst hawthorn. *Swammerdamia griseocapitella*, out of birch in Askham bogs. *Cerostoma vittella*, found at rest on the trunks of elm and oak, in the chinks of the bark. Of *Depressaria pimpinellæ*, I met with the larvæ in the flower heads of *Pimpinella magna*, and reared therefrom a long series. In Mr. Porritt's 'Yorkshire List' Stainton is given as the Yorkshire authority, the species not having been recorded since his work was published in 1857. *Gracilaria stigmatella*, several examples bred from larvæ taken in September 1883. Stainton's 'Manual' the last authority for York. *Ornix loganella*, by beating. *Coleophora limosipennella*, cases from birch and gale, and also the imago beaten from birch in Askham bogs. *C. discordella*, by mothing. *Bedellia somnulentella*, caught on the wing. *Elachista apicipunctella* beaten out of the lower branches of oak, in Acomb Wood. I may say that in the naming of some of the above, I had the help of Morris's 'British Moths.'—THOMAS WILSON, Holgate, York, February 10th, 1885.

Satyrus tithonus in Lincolnshire.—As Mr. J. W. Carter, in his note in the December *Naturalist*, after mentioning that Newman gave no records of the occurrence of this generally common species in Lincolnshire, gives only Owston Ferry and Gainsborough as localities in which he has observed it, I may state that in the neighbourhood of Louth and on the sea hills at Mablethorpe it is abundant. In this latter situation *S. tithonus* and *Cœnonympha pamphilus* are the commonest butterflies.—H. WALLIS KEW, Louth, 22nd December, 1884.

STRASBURGER'S NEW INVESTIGATIONS ON THE PROCESS OF FERTILISATION IN PHANEROGAMS.

By THOMAS HICK, B.A., B.Sc.,
President of the Botanical Section of the Yorkshire Naturalists' Union.

(Continued from page 159.)

In his second section Strasburger describes the way in which the pollen-tubes enter the stigma and work their way down the style to the ovary. The section is not a long one, and need not be dealt with in detail. It is shown that there are three or four principal modes in which the entrance of the pollen-tube is effected. The simplest is that met with in species of *Lilium*, where the pollen-tube grows down between the papillæ of the stigma until it reaches and enters one of the three apertures leading into the stylar canal. Down this canal it advances without penetrating any tissue, and so finds its way into the ovary. In *Atropa belladonna* and other *Solanaceæ* the process is scarcely more difficult, though here the pollen-tube advances within the conducting tissue of the style. The latter organ is traversed by a central string of elongated cells, which readily separate into longitudinal series ending in the stigmatic papillæ. Between these rows of cells, which form the conducting tissue, the pollen-tubes readily insinuate themselves, and so reach the ovary below. In *Cereus speciosissimus* a stylar canal is present, but the pollen-tubes do not enter it. On the contrary, they grow down an easily-splitting conducting tissue, which is found in the style, surrounding the cavity of the central canal. A somewhat different mode of entrance is met with in *Alopecurus pratensis* and other *Gramineæ*. Here the stigmatic arms of the style are provided with appendages, which are made up of cells whose upper ends are free and project like teeth. Where appendages are absent, the 'dentition,' so to call it, is provided by the epidermal cells. The pollen-grains emit a single tube each, and this grows until its tip enters one of the angles between the teeth. From this point the further course of the pollen-tube *is in the 'middle lamella'* which bounds contiguous cells of the appendages, as, according to Strasburger, observation easily demonstrates.

Agrostemma githago, or as it is now called (Hooker: Students' Flora of the British Islands, 3rd Ed.) *Githago segetum*, offers a further modification of the process. The five styles are provided on the inner stigmatic surface, with long club-like papillæ, each cell growing out into such a papilla at its upper margin. The pollen grains adhere to the surface of the papillæ, and produce one or a few tubes. The

pollen-tube reaches a papilla, *dissolves its wall at the point of contact*, and enters into the cell-lumen. When the tip of the growing tube reaches the base of the papilla, it bursts through the same into the conducting tissue of the style, along which it advances *between the walls of the cells* to the ovary. The *Malvaceæ* behave like *Githago* up to a certain point, and then present special peculiarities. Thus, when the pollen-tube has burst through the base of the papilla, and entered the conducting tissue, it does not immediately advance further. The contents of the pollen-grain collect themselves into an elongated, elliptical mass, with an irregular contour, and pass out of the grain. Then the aggregated contents grow down the conducting tissue, with a thick tube, the entire mass flowing onwards, and reminding the observer of the movement of a *Plasmodium*.

It will be understood that these are not the only methods by which the entrance of the pollen-tubes is effected, but they are the most important and the most typical. They will recall, at least to the minds of fungologists, and that in a most striking manner, the modes by which the hyphæ of parasitic Fungi gain admission to the tissues of the host-plant.

Having thus described the structure of the pollen-grain, the development of the pollen-tube, and the way in which the latter finds an entrance into the ovary, Strasburger proceeds to the later stages of the fertilisating process. In the *Coniferæ*, which are dealt with in the third section, the most important morphological facts are already tolerably well known, and Strasburger has little to add thereto. It is common knowledge indeed that here the process of fertilisation is actually a process of copulation between the *nucleus of the oosphere* or egg-cell, as Strasburger often calls it, and the *generative cell-nucleus*, which enters the *corpusculum*, or secondary embryo-sac, from the pollen-tube Hence our author does not dwell upon the essentials of the process, but examines two or three subordinate questions which are still under discussion. As these are of secondary importance only, we may pass them by, at least for the present, and follow him into the fourth section, where the case of the Angiosperms is subjected to careful and extended treatment.

In many of these plants, as everyone who has attempted to investigate the matter knows well, there are great difficulties in the way of decisively determining what actually occurs after the pollen-tube has entered the micropyle of the ovule. Strasburger's attempts to overcome these difficulties have, thus far, been partially successful only; and hence he has been in the main restricted to those plants, which by virtue of the transparency of their ovules, allow the necessary observations to be made. The orchids appear to have been

most serviceable, though *Monotropa*, *Torenia*, and species of *Gloxinia* and *Lilium* have also been employed with advantage. Various methods of treatment, details of which are always given, were adopted in dealing with the selected material, and the views now published are based upon the results of the whole series of investigations. Before summarising these, it will facilitate our task, and conduce to greater clearness, if we describe very briefly the organisation of the embryo-sac, in which the process of fertilisation actually occurs.

The embryo-sac of an Angiosperm is usually an elongated cell lying longitudinally in the nucellus of the ovule. The end which is turned towards the micropyle may project into that cavity, or it may be separated from it by a single layer of cells. The chief structures contained within it are (i) a pair of nucleated protoplasmic bodies placed at the micropylar end, termed the *synergidæ*; (ii) two or three similar bodies at the opposite end called the antipodal cells; and (iii) the egg-cell or oosphere, a nucleated protoplasmic mass, usually situated just below the *synergidæ*. It need hardly be said that the egg-cell is the most important structure contained within the embryo-sac. Its nucleus plays a leading part in the act of fertilisation, and out of the cell as a whole, the embryo is subsequently developed.

When the ovule is ready for fertilisation the synergidæ are often streaked longitudinally, while each develops for itself a small refractive cap at its micropylar end. Over these caps, the delicate wall of the embryo-sac is resorbed, so that towards the micropyle, the cavity of the sac is open.

By this time the pollen-tube has traversed the style and entered the ovary, where, stimulated by a substance encreted by the synergidæ, its direction of growth is so changed that it advances along the funiculus and enters the micropyle. Its tip having reached the caps of the synergidæ ceases growing, but the protoplasm passes through the membrane at the tip and travels between these structures towards the egg-cell. Strasburger previously assumed that the plasma of the pollen-tube was absorbed by one or both of the synergidæ, but he now admits that this was an error, and explains otherwise the appearances which led to it. Indeed, at the moment when the pollen-tube reaches the apex of the embryo-sac, one or both the synergidæ become disorganised, one of their functions, viz., that of indicating the way to the egg, being now completed. The protoplasm of the pollen-tube, moving forwards towards the egg, carries with it the *two generative cell-nuclei*, which now become *the male or sperm nuclei* that previous observers have seen in *copulation with the nucleus of the egg*. These nuclei, being of equal value, each may effect fertilisa-

tion—whichever happens to come first, indeed, does so—and in exceptional cases both have been seen to copulate simultaneously with the egg-nucleus. In fixed preparations the male nucleus may be seen, within the egg-cell, at various distances from the egg-nucleus, going to perform its functions. Its movement may be due to the influence of the egg-plasma which receives the male-nucleus brought by the pollen-tube plasma, and carries it to the nucleus of the egg. To the plasma of the pollen-tube, therefore, is allotted the same rôle as to the locomotive organs of spermatozoids; while the substance of the vegetative cell-nucleus, and that of the generative cell-nucleus not employed in fertilisation, may serve for the nourishment of the germ-nucleus in the fertilised egg. The two nuclei having been thus brought together blend into one, as do subsequently their nucleoli, and the act of fertilisation is accomplished. Meanwhile the egg has clothed itself with a thin cellulose wall, and is thus ready to enter upon those changes which ultimately result in the formation of an embryo.

(To be continued.)

BOTANICAL NOTES.

Plants of the Bradford District.—At a recent meeting of the Bradford Naturalists' Society, Messrs. H. T. Soppitt and W. West reported on the work done by the botanical section during the year. The following are amongst this year's additions:—33 species of Phanerogams, including *Polygonatum officinale* from Grassington, *Genista anglica* from Wilsden and Eldwick, *Myriophyllum verticillatum* from Keighley, *Medicago denticulata* and *M. maculata* from Heaton, and 16 species of *Rubus*, including *R. affinis*, *R. bloxamii*, *R. sprengelii*, *R. concinnus*, *R. mucronulatus*, and *R. macrophyllus*; of Vascular Cryptogams, *Lastrea spinulosa* from Shipley Glen, &c., and *Chara fragilis* from near Keighley; of Fungi 72, including *Urocystis fischeri* (a species hitherto unrecorded as British) from Saltaire; *Lepiota procerus*, *Lentinus lepideus*, *Boletus amara*, *B. piperatus*, *B. felleus*, *Russula nitida*, *Puccinia cirsii*, *Puccinia anthoxanthi*, *Peronospora alta*; of Lichens, *Lecidea cupularis* from Malham, &c., *L. cæruleo-nigricans* from Malham, *L. parasema* from Ilkley, *Solorina limbata* from Whernside, *Peltigera aphthosa* from Ingleton, and *Umbilicaria polyphylla* from Baildon, Wilsden, &c.; of Hepaticæ, *Scapania bartlingii* from Bolton Woods, and new localities for the following species, *Lejeunia echinata* from Gordale, *Scapania curta* from Baildon, *Bazzania trilobata* from Baildon; of Freshwater Algae 30 species, including *Cylindrocystis diplospora*, *Staurastrum orthostichum*, *Hyalotheca dissiliens*, and *Micrasterias crenata* from near Cullingworth. In addition to the above a large number of rare plants already known for the district have been found in new localities. Amongst the Mosses are *Fissidens crassipes* from Malham, and *Seligeria pusilla* from Gordale.

Corallorhiza innata in Northumberland.—I see from the communication of Rev. H. E. Fox (p. 139), that I have inadvertently misled him as to a second Northumbrian station for *Corallorhiza*. The locality which I mentioned to him is not in Alnwater, Northumberland, but on Alewater, Berwickshire, where this rare orchid was found by Mr. M. Shaw, curator of the Berwick Museum, growing in considerable quantity.—T. W. MACLAGAN, Berwick-on-Tweed, January 6th, 1885.

Naturalist,

NOTE ON AN ABNORMAL DEPOSIT OF DRIFT COAL IN NORTH DURHAM.

By G. A. LEBOUR, M.A., F.G.S.,

Professor of Geology in the Durham College of Science, Newcastle-upon-Tyne.

A LARGE portion of North Durham and South Northumberland is overspread by sands and gravels lying upon boulder clay. Like the latter, though newer, they are no doubt of glacial age, but having often been redistributed—and therefore, to a greater or less extent, altered and remodelled—since that time, they have sometimes lost many of the characteristics of glacial accumulation. In this Upper Drift, discontinuous wedge-shaped current-bedded patches of rolled coal-fragments are common; but in all cases hitherto observed by me, or of which I have received information, the bits of coal forming such deposits, as well as the deposits themselves, have been very small. The coal, too, is always such as would naturally result from the denudation of known Carboniferous seams cropping out in the higher ground of the neighbourhood.

Last month, however, Mr. W. Scorer Harris, of Andrew's House Colliery, North Durham, called my attention to an interesting bed of Drift Coal differing in many respects from any I had previously met with, which I at once went to see, and of which the following is a brief account.

The working shaft of Andrew's House Colliery (of which Mr. Harris is the resident engineer) stands about half-way between the valleys of the Team and Derwent, near Marley Hill, at a height of about 600 feet above sea-level. Close to the shaft is a small sand pit, worked for the sake of a fine brown sand, which is the lowest deposit visible there, but which rests (as is otherwise proved) upon boulder clay. Above this brown bed lies a much false-bedded mass of sand and gravel of various degrees of coarseness, with several small 'scares' or insignificant patches of minute coal-fragments of the usual kind. But on one side of the sand pit—as it was at the time of my visit—extending from the original outcrop of the gravel beds for several yards, as far as the pit had been worked, and how much farther one could not tell, was a bed of rolled coal of more than two feet in thickness, dipping steadily to the south-east. The regularity and seam-like appearance were remarkable, and at a distance one might well have mistaken the deposit for an ordinary Coal-Measure workable seam. The coal pebbles of which it was formed were, however, obvious to closer inspection, and proved the most remarkable feature of the case. Their size was most exceptional, many being several inches in diameter, and almost all being very large when compared

March 1885.

with the small bits of coal usually found embedded in these gravelly drifts. Especially singular were the largest, which indeed formed the chief portion of the bed. They were rather sub-angular than rounded like the other coal pebbles, as if they had not travelled far, and, except in parts, they lacked the lustre of the smaller fragments. In fact, these big lumps are unlike any Coal-Measure coal known in the neighbourhood, and at first sight resemble much more such a substance as brown coal. There is no woody structure, but the material of which the lumps are composed is very tough, and sounds like wood when struck. It burns somewhat like a cannel coal, with which, indeed, it has some other points of resemblance. There is no reason to doubt that this coal (as it must be called) is really of Coal-Measure age, and that it comes from no great distance; but it is strange that the bed from which it comes should be quite unknown in a district such as this, where every seam has been worked, tried, or proved over and over again. The analysis of the coal, as made by Mr. Richard Berkley and given me by Mr. Harris, only adds to the interest of the occurrence, since its results are quite foreign to the experience of miners in the great northern coalfield. Nor can the peculiarities of the coal be ascribed to long exposure to wet and weather, since the smaller and brighter pieces with which it is associated have no unusual characteristics, and have necessarily been exposed to the same influences, and probably for the same amount of time.

The analysis shows:—

Volatile matter	17·0	
Red Ash...	17·4	= 100·0
Fixed Carbon	65·6	

The specific gravity being 1·34, is greater than that of average Newcastle coal.

ICHTHYOLOGICAL NOTE.

Whitby Notes.—The past season has not been very productive in the matter of uncommon fishes. Amongst my memoranda are the following:—

October 31st, 1884.—Fifteen-spined Stickleback (*Gasterosteus spinachia* L.) caught in Whitby Harbour by clasp net.

November 13th.—Müller's Topknot (*Rhombus punctatus* Bl.) caught off Whitby by John Storr. Unfortunately I did not see this specimen, but from the description of it given to me by a person, I showed him Müller's Topknot in the museum, and he said it was exactly like it. This is the second instance of its coming under my notice here, the first having been on the 3rd of May, 1881.

December 26th.—One coble landed 21 scores of Haddocks (*Gadus æglefinus* L.). This is worth mention, because since this date they have been rarely caught here, and appear to have left for the spawning ground.

December 31st.—Common Basse (*Labrax lupus* Lacép.), caught by Dring, weight 3¾ lbs., length 22 inches, girth 6 inches.—THOMAS STEPHENSON, Whitby, February 13th, 1885.

Naturalist,

CONCHOLOGICAL NOTES.

Bulimus acutus.—The only Sussex record that I am aware of is that of Mr. Langdon, who is said to have found it near Eastbourne in 1874, and this locality seems no longer to produce the species, for Mr. J. H. A. Jenner, of Lewes, writes to me as follows:—'As I have recently searched the whole coast between Lewes and Eastbourne, on several occasions, for *B. acutus*, without success, I am obliged to conclude that the Eastbourne specimens were somehow introduced. They are larger than Torquay specimens, and dull whitish.' Moreover, I have myself recently explored the coast of Sussex from Bognor to Littlehampton, and from Worthing to Brighton, and although *H. virgata* was common enough, no *B. acutus* turned up.

Another point I will venture to refer to is the generic position of the species in question. It seems to me that it ought undoubtedly to be placed in *Helix*, close to *H. virgata*, and not in *Bulimus* at all. (Kobelt places it in the sub-genus *Cochlicella*, with *Helix conoidea*, &c.) Its habits are similar to those of the group of *Helix* known as *Xerophila*, to which *H. virgata* belongs; and, moreover, there is an almost complete series of forms existing which fill up the gap between the two species. For instance, on looking at my own collection, I find *Helix maritima*, an elegant form very similar to *virgata*, but having the spire a little more raised; then come specimens of *H. pyramidata* from Algiers, showing a slightly more raised spire, with compressed whorls and a smaller umbilicus, and this species varies in its banding in the same way as *virgata*, for in my four Algiers specimens the first has a band-formula 00300, with a very well-defined band; the second has a similar formula, but the band is pale; the third belongs to the var. *alba*, being white and bandless; and the fourth has a formula 00340, with the merest trace of the fifth band. A still more conical form is *H. conica* from Malta, while some forms show a keeled periphery, such as *H. terrestris* from Algeria, *H. elata* from Capri, and *H. tuberculosa* from Sinai. But disregarding these diverging forms, we may easily trace *H. acuta* (*Bulimus acutus*) by the help also of Mogador specimens of *H. conoidea*, which form another of the many connecting links between this and *H. virgata*.—T. D. A. Cockerell, 51, Woodstock Road, Bedford Park, Chiswick, December 3rd, 1884.

Bulimus acutus in South Wales.—In addition to the counties you note for *B. acutus*, I have found it at Cardiff, in Glamorganshire. It occurs plentifully on the moors along with *H. virgata*, but whether it has been introduced or not, as so many species have in this locality, I am not prepared to say. I have never seen any traces of it at any of our Lancashire watering-places, but do not see why it should not be found, and hope it may ultimately turn up.—Edward Collier, 3, Friday Street, Manchester, February 10th, 1885.

Mussels Eaten by Animals and Birds.—We have evidence proving this fact, occurring in several places in Nottinghamshire. 1. On the canal banks close to Nottingham we find broken shells (*A. cygnea*, *U. tumidus*, *U. pictorum*, and *D. polymorpha*) occurring in such positions and under such circumstances that leave no doubt about the fact that Rats (Water Voles?) have brought them up alive from the mud to feed upon them in little nooks on the canal banks. 2. At Sutton-in-Ashfield the water in the mill dam is very low, and one can get well amongst the Anodons. Here we find many specimens that have had holes (varying in size from that of a threepenny-bit to a crown piece) pecked through the shell by the birds (? species) for the purpose of getting at the animal, as proved by circumstantial evidence. Here also animals of some kind have also feasted on the Mussels (*Anodonta cygnea* only present in the dam), for the ventral and posterior margins of many of them have been bitten away in pieces, leaving a kind of scolloped edge. Rat dung is plentiful on the mud, which has dried too hard for the 'spoor' of small animals to be left as marks; and most of the specimens obtained were found stranded, owing to the shrinking of the water. (See note on large Anodons in Notts.) 3. At Ossington Lake, to which I paid a visit with my friend Mr. Gain of Tuxford, many of the Mussels (*A. cygnea* and *U. pictorum*), left exposed owing to drainage of the lake for cleaning purposes, were broken at the posterior end in a way that led us to suppose that it was the work of Rats or other animals.—C. T. Musson, November 1884.

ORNITHOLOGICAL NOTE.

Breeding of the Reed Warbler (Acrocephalus streperus) in Cheshire.—Mr. Francis Nicholson, of Altrincham, writes us regarding Mr. Oldham's record in our last, that although this species has not been recorded to have nested, still it does so on all the Cheshire meres that are suited to its habits; and he cannot account for the omission of this fact in Mr. Seebohm's 'British Birds,' since a number of eggs in Mr. Seebohm's collection were taken by Mr. Nicholson in Cheshire. He also remarks that there is one record of the Reed Warbler in Lancashire (Zool., 1843, p. 222), near Wigan, on the authority of Vivian Walmsley, who mentions its appearance, but does not state whether it was nesting, though, from the date, Mr. Nicholson thinks such must have been the case. A few years ago Mr. Nicholson was at some trouble to snare a number of these birds, to ascertain if the very closely-allied Marsh Warbler (*Acrocephalus palustris*) visited Cheshire, with the result that it is pretty certain it does not.—Eds.

BOOK NOTICES.

'List of British Vertebrate Animals.'—By Francis P. Pascoe. London: Taylor and Francis, Red Lion Court, Fleet Street, 1885. Small 8vo., cloth, pp. 85, price 4s.

This list (the arrangement of which accords with that of the author's previous work on 'Zoological Classification') is not what we should have expected from the pen of a naturalist so favourably known as the author is, and we cannot think he has done himself justice in publishing it. Some of his inclusions and conclusions are to us scarcely intelligible, such as the insertion of the Tortoise, the Prairie-dog of Epping Forest, the Goldfish, &c. The inclusion of such thorough aliens appears to us no better than the practice which the old naturalists had of including the various breeds of domesticated animals in the fauna. Almost any one of these would run wild and thrive were they allowed, and would have equally good right to inclusion in our lists as the animals cited. The author evidently knows but little of the constitution of the British avifauna, and although he is familiar with the standard works on the subject, as evidenced by his introduction, he does not appear to have consulted them to advantage. Thus he tells us in his introductory remarks that the 'names in *italics* indicate those animals that are not regarded as truly indigenous,' and includes under this head such birds as the Black Redstart, Reed Bunting (*Emberiza schœniclus*), Shore Lark, Golden Oriole, Little Stint, Pink-footed Goose, Rough-legged Buzzard, &c., all of which are regular visitors, and one even a common resident species. On the other hand such truly accidental or casual visitants as the Water Pipit (*A. spipoletta*), Tawny Pipit (*A. campestris*), Little Ringed Plover (*Æ. curonica*), Broad-billed Sandpiper (*T. platyrhyncha*), American Bittern (*B. lentiginosus*), Ruddy Sheldrake (*T. rutila*), Laughing Gull (*L. atricilla*), Gyr Falcon (*F. gyrfalco*), Greenland Falcon (*F. candicans*), Iceland Falcon (*F. islandus*), and the Eagle Owl (*B. maximus*), are included by him as truly indigenous. The list will, however, be to some extent useful, as it is the only British list which covers the whole range of the vertebrate class.

'A Systematic List of the Butterflies of Europe.'—By Henry Charles Lang, M.D., F.L.S., etc., extracted from his work 'Rhopalocera Europæ: the Butterflies of Europe.' London: L. Reeve & Co., 1884, 4to, pp. 6, price 8d. and 1s.

This list, in spite of its inconveniently large size, will be of service to lepidopterists who study the whole range of European butterflies, more especially if used in conjunction with the magnificent work from which it is reprinted.

NOTES AND NEWS.

We have pleasure in inserting in the present number some notes upon marine fishes. In this department of our vertebrate fauna more good work remains to be done than in any other, and it is to be hoped that naturalists living near our coast-line will pay increasing attention to the subject. We shall be glad to insert notes—and, so far as we are able—to assist in the identification of specimens.

The annual meeting of the Yorkshire Naturalists' Union at Doncaster, on the 3rd of March, bids fair to be very successful. The Microscopical Conversazione, with which the Doncaster Microscopical Society will entertain the Union, will be an exceptionally brilliant one, and quite worthy of the repute which the Society has gained for its organization of such gatherings.

Our arrangements for the meteorological returns for 1885 are not quite complete, and we have decided to publish the January and February returns together in our next issue. We have arranged for observations upon barometrical pressure, temperature in shade, with highest maximum and lowest minimum, and rainfall, from a number of additional stations in representative districts throughout the northern counties, and Mr. George Paul, F.G.S., F.R.Met.S., of Moortown, Leeds, has kindly undertaken the supervision of the observations for us.

Many members of the Yorkshire Naturalists' Union will be gratified to learn that their esteemed and genial vice-president, the Rev. William Fowler, M.A., has recently been presented with a handsome timepiece and other articles (to the value of over a hundred pounds) by his parishioners, on the completion of the twentieth year of his incumbency of the vicarage of Liversedge.

They will also be interested to note that their former secretary, Mr. George Brook, ter., F.L.S., who has carried on biological investigations for some years past by means of his well-equipped and large private aquarium at Huddersfield, has been appointed Naturalist to the Fishery Board for Scotland, in which capacity his duties will be to study the life history and development of the food fishes.

At the anniversary meeting of the Royal Society one of the two Royal Medals which are given each year by the Crown was conferred upon Prof. Daniel Oliver, F.R.S., of the Royal Gardens at Kew, in recognition of his services to botanical science. This is the second instance of the honour falling to a Northumbrian, the first being in the case of Mr. Albany Hancock.

The issue of a new 'Flora of Oxfordshire,' including the contiguous portion of Berkshire, is announced by our old contributor, Mr. G. Claridge Druce, F.L.S., 118, High Street, Oxford. The subscription price is to be 10/-, and the Flora is based upon something like 20,000 records.

Recent elections to the Fellowship of the Linnean Society include the names of Mr. Geo. W. Oldfield, M.A., of Harrogate, and Mr. John Emmet, of Boston Spa, Yorkshire.

The twenty-fourth annual meeting of the Manchester Scientific Students' Association was held on the 21st of January. The report stated that the total number of members was 321, and that a proposal to federate the various scientific societies of Manchester was under consideration. On the election of officers, Prof. W. C. Williamson, LL.D., F.R.S., was again chosen as president, while Mr. Samuel Massey was appointed treasurer, Mr. Theodore Sington librarian, and Mr. S. Okell secretary.

The publication of Mr. Ellis's list of the butterflies of Lancashire and Cheshire led us to institute a comparison between it and Mr. Porritt's list of the butterflies of the neighbouring county—Yorkshire. Having done this we were interested to note the parallelism that exists between the two faunas. Each list contains forty-eight species, forty-four of which are common to the two areas, thus leaving each with four species not possessed by the other. Even here a kind of parallelism holds. *Thecla W-album*, which is not uncommon in one or two South Yorkshire woods, is balanced by the Lancashire *T. betulæ*, and the Scarborough instance of *Argynnis lathonia* by the Windermere one of *A. niobe*. Then the Grange instances of the occurrence of *Lycæna corydon* may be set against the Yorkshire records of *Hesperia comma*, and the former occurrence in Yorkshire of *Papilio machaon* against the dubious record of *Melitæa athalia* in Cheshire. One species—*Melanargia galatea*—appears to be now extinct in both districts.

The ninth annual meeting of the Bradford Naturalists' Society took place on the 9th of December, when a favourable condition of affairs was announced in the report. The election of officers for 1885 resulted as follows :—Mr. A. I. Kershaw, president; Dr. W. Hill Evans and Mr. H. T. Soppitt, vice-presidents; Mr. J. Eastwood, re-elected secretary; Mr. J. Bennett, treasurer; Mr. B. Illingworth, librarian. The sectional recorders were appointed as under :—Botanical, Messrs. Soppitt and West; Entomological, J. W. Carter; Vertebrate, Mr. J. Firth; Invertebrate, the president; Conchological, Mr. Soppitt; Geological, Mr. H. S. Ward.

The Manchester Cryptogamic Society held its annual meeting on the 15th of December. The report showed that much good work had been done by the members in the elucidation of difficult points in respect of various cryptogamic plants, and in extending a knowledge of their distribution. Dr. B. Carrington, F.R.S.E., was re-elected president and Mr. Thomas Rogers, honorary secretary, while Capt. P. G. Cunliffe and Mr. James Cash were chosen as vice-presidents, and Mr. W. H. Pearson as librarian.

The twenty-third annual meeting of the Heckmondwike Naturalists' Society was held on the 27th of December. After the adoption of the reports, Mr. J. A. Erskine Stuart, L.R.C.S.E., was re-elected president, and the following members to the other offices, viz.:—Messrs. J. M. Barber and Walter Exley, vice-presidents; Mr. John Fryer, secretary; Mr. Thomas Exley, treasurer; Mr. T. Simpson, annalist; and Mr. Fred. Allatt, librarian. Mr. J. M. Barber was again chosen to represent the Society on the general committee of the Yorkshire Naturalists' Union; and a list of papers to be read in 1885 was announced. Arrangements were made for holding a soirée early in the year.

The sixteenth annual meeting of the Liverpool Microscopical Society was held on the 16th of January, the president, Charles Botterill, F.R.M.S., in the chair. The Rev. H. H. Higgins, M.A., and Wm. Carter, M.D., were elected vice-presidents; J. M. Williams, F.R.M.S., treasurer; Alfred Leicester, curator; and Isaac C. Thompson, F.R.M.S., secretary.

A new society having for its object the promotion of intercourse and mutual help among working botanists, particularly with regard to critical species, has been founded. It takes as its title 'The Watson Botanical Exchange Club' and within a month of its formation enrolled thirty members, a proof that it was needed by the class of botanists for which it was instituted. Mr. A. R. Waller, of York, is honorary secretary, and Mr. P. F. Lee, of Dewsbury, treasurer, while Mr. Arthur Bennett, F.L.S., fills the important office of referee. The rules lay stress on the importance of sending up for authentication doubtful and critical forms.

From the Royal Dublin Society we have received a copy of Mr. James W. Davis's monographic paper on the fossil fishes of the Carboniferous Limestone series of Great Britain. This makes an imposing volume, in which the subject is exhaustively treated and adequately illustrated. The magnificent collection of the Earl of Enniskillen furnished the greater part of the material upon which the monograph is based, and it appears that the neighbourhood of Armagh has yielded a very large proportion of the known species. A tabulated list of species and their place of origin is given, wherein the North of England figures as follows:—Yorkshire (Leyburn, Richmond, Settle, and Kettlewell), 27 species, Derbyshire 13, Westmoreland (Kendal) 5, and Northumberland (Lowick) 11. Much of the Yorkshire material is due to the skill and energy of Mr. William Horne, of Leyburn, whose services to the science are recognised by Mr. Davis dedicating a new species in his honour. To Mr. Davis himself much credit is due, and it is an honour to have been entrusted with the task of describing the contents of a collection so complete and unrivalled as Lord Enniskillen's, which we are happy to note is now the property of the nation.

Naturalist,

BIBLIOGRAPHY OF 1884:

Papers and records published during the year with respect to the natural history and physical features of the North of England.

We are gratified with the appreciative welcome which many of our readers have given to the first instalment of the Bibliography. We should be still further pleased if any deficiencies in it, or any subsequent portion of it, were pointed out to us. We may repeat that, where no other year is either expressed or implied, 1884 is always understood.

PART II.—BIRDS.

The scientific names which are editorially inserted are in strict accordance with the British Ornithologists' Union List of Birds.

Anonymous (no signature).

Robbery by a Tomtit. Land and Water, May 10th, p. 439. **Cheshire.**

At Sheabridge Hall, Cheshire, a 'Tomtit' abstracted a cheque from a letter-box.

Anonymous (no signature).

Lancaster. Nat. Hist. Journ., December 15th, viii. 179. **Lancashire.**

Several Swallows (*Hirundo rustica*) on October 23rd.

Anonymous (no signature).

York. Nat. Hist. Journ., December 15th, viii. 179. **Yorkshire.**

Larks (? *Alauda arvensis*) singing freely, November 1st and 3rd.

Anonymous (no signature).

Determined Tits. Land and Water, August 9th, p. 150. **Northumberland.**

A pair of Blue Tits [*Parus cæruleus*], persisted, time after time, both in 1883 and 1884, in nesting in a letter-box at Nisbet, Northumberland.

Anonymous (no signature). **Lincolnshire.**

Natural History at the International Health Exhibition. Field, May 17th, p. 669.

'The Knot (*Tringa canutus*) . . mostly comes to market from Lincolnshire.'

Honey Buzzard [*Pernis apivorus*] **in Lincolnshire.** Land and Water, December 6th, p. 557.

Killed in September, on Sir Hugh Cholmley's estate, Easton Hall. Set up by J. Evans, taxidermist, Bourne, Lincolnshire.

Anonymous [The Gardener (The Elms, Kirk Ella, Hull)]. **Yorkshire.**

Robin's [*Erithacus rubecula*] **Nest in a pot of Maidenhair Fern.** Field, May 17th, p. 670.

The fronds completely hide the nest. Bird sitting on five eggs.

Anonymous [C. Histos]. **Notts.**

Puffin [*Fratercula arctica*] **in Nottinghamshire.** Field, November 29th, p. 760.

Picked up after a heavy storm week before last. One of the first occurrences of the species in Notts.

Anonymous (Little Rod).

Notes from Ullswater. Land and Water, Jan. 5th, p. 17. **Cumberland.**

December, 1883, mild. Starlings [*Sturnus vulgaris*] in flocks near Patterdale Church. Rock Dove [*Columba livia*] on the Cliffs of Priest Crag, where

it is seldom heard before March. Green [*Vanellus vulgaris*] and Golden Plovers [*Charadrius pluvialis*] also noted.

Our Migratory Birds (Ullswater District). Land and Water, May 10th, p. 439.
Dates of arrival and notes on numerous species given.

Late Corncrake [*Crex pratensis*]. Land and Water, November 8th, p. 462.
One picked up dead close to Flimby Station, on the shore of Solway Firth, October 28th. The body was quite warm. Killed by the telegraph wire.

ANONYMOUS ['SNIPE']. **Derbyshire.**

Wood Sandpiper [*Totanus glareola*] **in Derby.** Field, September 20th, p. 431.
One killed at Calke Abbey, on August 24th, is now in Sir J. H. Crewe's collection.

Manx Shearwater [*Puffinus anglorum*] **near Burton-on-Trent.** Field, September 20th, p. 431.
One mobbed by Turkeys and easily captured in a field at Walton; now in Mrs. Wyse's possession.

JAMES W. ADDYMAN. **Yorkshire.**

Bittern [*Botaurus stellaris*] **in Yorkshire.** Field, February 2nd, p. 165.
A fine specimen shot by the writer at Arkendale, near Knaresborough, January 19th.

OLIVER V. APLIN.

Uncommon Varieties of British Birds. Zool., January, pp. 10-13. **Notts.**
List of varieties in the collection of Mr. J. Whitaker, of Rainworth Lodge, Mansfield.

OLIVER V. APLIN. **Cumberland, Yorkshire, Derbyshire, Notts, Lincolnshire.**

Note of some rare British Birds in the collection of Mr. J. Whitaker. Zool., February, pp. 50-52.
The list includes notes of various Nottinghamshire, Yorkshire, Cumberland, Derbyshire, and Lincolnshire specimens.

JOHN ARMSTRONG [Northallerton]. **Yorkshire.**

Magpie [*Pica rustica*] **laying in Confinement.** Field, July 5th, p. 6.
One which had been in confinement fourteen years, laid two eggs.

E. W. H. B. (Repton, Derbyshire). **Derbyshire.**

Early Nesting of the Long-tailed Tit [*Acredula rosea*]. Field, April 12th, p. 499.
Two nests on March 24th—one with several eggs; the other just finished.

J. BACKHOUSE, JUN. **Yorkshire.**

Great Grey Shrike [*Lanius major* Pall.] **at York.** Zool., February, p. 68.
A female of the northern type of Great Grey Shrike (*Lanius major* Pall.) was killed very near to York, November 1883.

The American Kestrel [*Falco sparverius*] **in Yorkshire.** Zool., June, p. 230.
The writer announces that he has gained additional strong evidence in the matter.

Singular Accident to a Sandpiper [*Tringa alpina*]. Nat. Hist. Journ., June 15th, viii. 99.
Extract from the Field, supplemented by a remark showing that the occurrence was near Spurn.

M. BAILEY. **Yorkshire.**

Notes from Flamborough. Land and Water, October 11th, p. 361; November 8th, p. 462; and November 22nd, p. 501.
Woodcocks [*Scolopax rusticula*] arrived early; one shot October 6th. Hooded Crow [*Corvus cornix*] seen same day. Great arrival of Woodcocks October 29th; also of Fieldfares [*Turdus pilaris*], Thrushes [*Turdus musicus*], Blackbirds [*Turdus merula*], and Crested Wrens [*Regulus cristatus*]. Large flights of Kittiwakes [*Rissa tridactyla*] passed the headland northward,

Naturalist,

November 14th. Quantities of Redthroated Divers [*Colymbus septentrionalis*], and several flocks of Guillemots [*Lomvia troile*] in winter plumage, were seen same day.

BARNSLEY NATURALISTS' SOCIETY. **Yorkshire.**

Reports of Meetings. Naturalist, April, June, July, ix. 152, 153, 195, 214; and Quart. Trans. Barnsley Nat. Soc., iv. 4 and 5.

Records of bird-movements in the South Yorkshire district during the first half of the year.

E. F. BECHER (Southwell). **Notts.**

Food of the House Sparrow [*Passer domesticus*]. Zool., August, p. 342.

They cleared apple trees of Tortrix-larvæ, afterwards reverting to a grain diet.

W. BECHER (Southwell). **Notts.**

Strange behaviour of Starlings [*Sturnus vulgaris*]. Zool., February, p. 70.

Three having been shot out of a flock, the others, after taking wing, turned back and hovered for about a minute over their slain companions.

Nesting of the Long-tailed Titmouse [*Acredula rosea*]. Zool., Sept., p. 383.

Various Nottinghamshire nests noticed or described; the bird was more abundant near Southwell during the spring of 1884 than for several years previous.

ROBERT BELLHOUSE (Alderley Edge). **Cheshire.**

Management of Rookeries [*Corvus frugilegus*]. Field, May 3rd, p. 597.

In spring, 1883, two pairs built in beech trees in writer's garden; in 1884 there were some twenty-eight to thirty nests. He enquires how to make the rookery permanent.

GEORGE BOLAM. **Northumberland.**

Ornithological Notes [from Berwick-upon-Tweed]. Proc. Berw. Nat. Club, x. 384-396.

Very numerous and detailed notes, referring partly to the neighbourhood of Berwick-on-Tweed and partly to North Northumberland, and to the following birds:—Osprey (*Pandion haliaëtus*), Common Buzzard (*Buteo vulgaris*), Honey Buzzard (*Pernis apivorus*), Rough-legged Buzzard (*Archibuteo lagopus*), Great Grey Shrike (*Lanius excubitor*), Tawny Owl (*Syrnium aluco*), Pied Fly-catcher (*Muscicapa atricapilla*), Red-breasted Flycatcher (*M. parva*), Golden Oriole (*Oriolus galbula*), Hedge Accentor (*Accentor modularis*), Ring Ouzel (*Turdus torquatus*), Grasshopper Warbler (*Locustella nævia*), Lesser Whitethroat (*Sylvia curruca*), Golden-crested Wren (*Regulus cristatus*), Waxwing (*Ampelis garrulus*), variety of Meadow Pipit (*Anthus pratensis*), Goldfinch (*Carduelis elegans*), albino Starling (*Sturnus vulgaris*), probable nesting of Hooded Crow (*Corvus cornix*), Hoopoe (*Upupa epops*), breeding of Stockdove (*Columba œnas*), Quail (*Coturnix communis*), Grey Plover (*Squatarola helvetica*), Dusky Redshank (*Totanus fuscus*), Ruff (*Machetes pugnax*), Little Stint (*Tringa minuta*), Bar-tailed Godwit (*Limosa lapponica*), Black-tailed Godwit (*L. ægocephala*), Whimbrel (*Numenius phæopus*), Landrail (*Crex pratensis*), Bewick's Swan (*Cygnus bewicki*), Grey-lag Goose (*Anser cinereus*), Bernicle Goose (*Bernicla leucopsis*), Shoveller (*Spatula clypeata*), Pintail (*Dafila acuta*), Smew (*Mergus albellus*), Great Crested Grebe (*Podiceps cristatus*), Red-necked Grebe (*P. griseigena*), Sclavonian Grebe (*P. auritus*), Eared Grebe (*P. nigricollis*), Stormy Petrel (*Procellaria pelagica*).

BRADFORD NATURALISTS' SOCIETY.

Diary of Natural History Observations for 1884. 28 pp. **Yorkshire.**

Includes numerous notes on birds observed in the Bradford district during the year.

BRADFORD NATURALISTS' SOCIETY. **Yorkshire, Lincolnshire.**

Reports of Meetings. Naturalist, April and June, ix. 153-4, 196.

Notes on birds observed in Yorkshire and Lincolnshire.

MARIA BROCKBANK. **Yorkshire**

White Robin [*Erithacus rubecula*]. Nat. Hist. Journ., April 15th, viii. 60.

Near Settle.

E. I. J. BROWELL. **Durham, Northumberland.**

Address to . . the Tyneside Naturalists' Field Club, . . May 11th, 1882. Nat. Hist. Trans. Northumberland, Durham, and Newcastle, viii. 161 to 168 and 171 (1884).

Summary of bird-notes made at the 1881 field meetings, viz.:—Corbridge-on-Tyne, Whit-Monday; Middleton-in-Teesdale, June 29th and 30th; Marsden; &c. And other notes at p. 171 considered with reference to climate.

D. F. BURTON. **Yorkshire.**

Late Nesting of Partridge [*Perdix cinerea*]. Field, November 1st, p. 597.

One sitting on nine eggs, October 4th, in a sheltered position, presumably at Cherry Burton, Beverley.

G. F. BUTT. **Westmoreland.**

[**Pale variety of Red Grouse** (*Lagopus scoticus*)]. P. Z. S. 1884, p. 45; Zool., March, p. 119.

Two shot out of a brood of ten on the Appleby Moors, Westmoreland, September, 1883. Remarkable for their pale plumage, nearly white, mottled with brown.

C. C. **Durham.**

Large Snipe [? *Gallinago cœlestis*]. Field, November 15th, p. 695; Land and Water, same date, p. 477.

A full Snipe, quite 6 oz. in weight, shot in Co. Durham, November 6th. The Editor of the Field suggests it may have been the Great or Solitary Snipe [*Gallinago major*], which weighs from 6 oz. to 8 oz.

F. CARR AND J. E. C[LARK].

York. Nat. Hist. Journ., May 15th, viii. 80. **Yorkshire.**

Notes on nesting of various birds, and on a Pied Sparrow [*Passer domesticus*].

JAMES CARTER. **Yorkshire.**

Oyster Catchers [*Hœmatopus ostralegus*] **inland.** Field, March 1st, p. 280.

A pair observed, February 2nd, after a strong N.E. gale, on the Yore banks at Masham; they left next day. First instance which has come under observation there.

Starling [*Sturnus vulgaris*] **ousted by a Swift** [*Cypselus apus*]. Field, May 24th, p. 702.

At Masham. The Starlings had occupied a last year's Swift's nest.

Nesting of the Hawfinch [*Coccothraustes vulgaris*] **in North Yorkshire.** Field, August 30th, p. 300.

Several occurrences at Masham in the last few years. In 1883 a family made an onslaught on green peas, and a young one was caught. In 1884, a nest with five eggs found, May 22nd.

Green Sandpiper [*Totanus ochropus*] **near Masham.** Field, September 13th, p. 396.

Three observed the past few weeks—one on Marfield Pond, and the other two on the Yore bank, near Masham. A fourth killed at Nutwith Cote.

Notes from North Yorkshire. Field, October 18th, p. 530.

Another Green Sandpiper (*T. ochropus*) observed on the Yore near Masham, October 5th. A flock of eighteen ducks, on the 6th, were thought to be Tufted Ducks [*Fuligula cristata*]. The first Woodcock [*Scolopax rusticula*] flushed on the 11th at Bramley Grange, though several had been previously seen. Brambling [*Fringilla montifringilla*] shot, on the 11th, out of a flock. A remarkably light-coloured Hooded Crow [*Corvus cornix*] shot at Coverhead,

Naturalist,

on the 9th—now in his son's collection. Fieldfare [*Turdus pilaris*] arrived October 12th.

Extraordinary Bag of Partridges [*Perdix cinerea*]. Field, October 18th, p. 550.

On September 23rd, Earl de Grey killed 'single-handed,' near the outskirts of the manor, 151½ brace, 'all gathered.' Is not this the heaviest bag on record for Yorkshire?

THOMAS CARTER. **Yorkshire.**

Breeding of Redshank [*Totanus calidris*] **in North Yorkshire.** Zool., February, pp. 72-73; Naturalist, February, ix. 116.

A pair nested near Masham in the spring of 1883.

Notes on Birds' Nests from North Yorkshire. Naturalist, February, ix. 117-118.

Detailed record of the 1883 nesting season at Masham.

Notes from North Yorkshire. Field, February 23rd, p. 276.

Notes on the occurrence of Goosander (*Mergus merganser*), January 10th, and Black-headed Gull (*Larus ridibundus*), February 1st, at Ripon; Oyster Catchers (*Hæmatopus ostralegus*) at Masham. on 2nd and 3rd, after gale from N.E. On the 2nd a 'flock of dark-coloured birds passed over' Masham.

Arrival of Summer Birds. Field, April 12th. p. 499; April 19th, p. 560; April 26th, p. 566; May 3rd, p. 597; May 10th, p. 651.

Dates are given as follows:—At Masham, N. W. Yorkshire, Chiffchaff [*Phylloscopus rufus*], March 26th; Willow Wren [*P. trochilus*], April 4th; Sand Martin (*Chelidon urbica*), April 5th; Redstart (*Ruticilla phœnicurus*), April 6th; Swallow [*Hirundo rustica*], April 9th; Common Sandpiper [*Tringoïdes hypoleucos*], April 13th; Tree Pipit [*Anthus trivialis*], April 28th; Grasshopper Warbler [*Locustella nævia*]. April 29th; Corn-crake [*Crex pratensis*], April 29th; Blackcap [*Sylvia atricapilla*], April 30th; Garden Warbler [*Sylvia hortensis*], April 30th; Pied Flycatcher [*Muscicapa atricapilla*], April 30th; Yellow Wagtail [*Motacilla raii*], April 30th: Whinchat [*Pratincola rubetra*], April 30th; Martin [*Chelidon urbica*], April 30th; Whitethroat [*Sylvia curruca*], May 2nd; Sedge Warbler [*Acrocephalus phragmitis*] May 2nd; Swift [*Cypselus apus*], May 5th; and Cuckoo [*Cuculus canorus*], May 6th.

Green Sandpiper [*Totanus ochropus*] **in North Yorkshire.** Zool., October, p. 431.

A party passed Masham in the middle of August. Coincidence of dates of appearance for three years—viz., August 15th, 1880; August 16th, 1883; August 15th, 1884—is noticed.

Egging on the Coast of Yorkshire. Zool., November, pp. 438-448.

Details of a fortnight's experience among the birds at Flamborough and Filey, June-July.

Breeding of the Hawfinch [*Coccothraustes vulgaris*] **in North Yorkshire.** Zool., December, p. 487.

Nest found near Masham with five eggs on 22nd of May. A young bird captured in July, 1883, in a net placed to protect the peas.

W. S. CARTER. **Yorkshire.**

Larks [*Alauda arvensis*] **at Midnight.** Nat. Hist. Journ., June 15th, viii. 100.

Two heard singing at 12.30 p.m., May 11th, at Bell Hagg, near Sheffield.

J. CHALONER. **Yorkshire.**

Goosanders [*Mergus merganser*] **at Newton Kyme.** Naturalist, April, ix. 151.

Nine seen on the Wharfe, 6th March.

R. W. CHASE. **Northumberland.**

Notes on the Terns breeding at the Farne Islands. Midl. Nat., March, vii. 67-70.

Four species visit the islands annually, the Common Tern (*Sterna fluviatilis*), Arctic Tern (*S. hirundo*), Roseate Tern (*S. dougalli*), and Sandwich Tern

(*S. cantiaca*). Full and interesting details of their habits and breeding haunts are given.

Birmingham Natural History and Microscopical Society. Midl. Nat., November, vii. 331.

A male *Uria grylle* shot at the Farne Islands in nearly full summer plumage, February 1st.

ROBERT MILLER CHRISTY. **Yorkshire, Lancashire, Northumberland.**

Do the Blackbird [*Turdus merula*] and the Thrush [*T. musicus*] ever interbreed? Trans. Norf. and Norw. Nat. Soc., 1884, iii. 588-596.

Instances cited from Yorkshire, Lancashire, and Northumberland; and opinion expressed that they do occasionally interbreed.

R. M. CHRISTY. **Lancashire.**

Hybrids between Blackbird [*Turdus merula*] and Thrush [*T. musicus*]. Zool., April, p. 146.

Quotes the Ormskirk instance recorded in Loudon's Mag. Nat. Hist. for August, 1834.

W. EAGLE CLARKE AND W. DENISON ROEBUCK. **Yorkshire.**

Notes on the Vertebrate Fauna of Yorkshire. Zool., May, pp. 171-184; Naturalist, April and May, ix. 147-157 and 167-176.

Voluminous notes, supplementary to the writers' Handbook of the Vertebrate Fauna of Yorkshire (1881), and including a bird [*Emberiza rustica*] new to the fauna.

[LORD] CLIFTON. **Yorkshire.**

The Arrival of Woodcocks [*Scolopax rusticula*]. Field, October 25th, p. 586.

October 11th was date of arrival in North Yorkshire.

Great Grey Shrike [*Lanius excubitor*] **and Chaffinches** [*Fringilla cœlebs*]. Field, December 27th, p. 896.

Remarks on the punctuality of the Shrike's autumnal appearance at Spurn and other places.

JOHN CORDEAUX. **Northumberland, Durham, Yorkshire, Lincolnshire.**

Report on the Migration of Birds in the spring and autumn of 1883. 8vo, 1884. Reprinted in Land and Water, August 16th, p. 173; August 23rd, p. 199; and August 30th, p. 212.

Pages 33-62 are devoted to the East Coast of England, and contain not only full notes on the migratory movements of birds as observed at the Light-houses and Light-ships, but also the individual observations of Messrs. T. H. Nelson, C. Donald Thompson, Matthew Bailey, and William Eagle Clarke. The information is given under the head of the species, of which about 133 are included.

Report of the Committee . . for . . obtaining . . observations on the Migration of Birds at Light-houses and Light-ships . . . . . . Rep. Brit. Assoc., Southport 1883, pp. 229-233.

The abstract read before the Biological Section of the British Association.

The Sea Birds at Flamborough. Naturalist, January, ix. 93-95. **Yorkshire.**

The substance of the writer's remarks in reporting for the Vertebrate Section of the Yorkshire Naturalists' Union at Filey, on the 11th of June, 1883. In addition to the list of Sea Birds observed on the cliffs, notes are given on migratory movements as observed in autumn, 1882.

Note by Mr. Cordeaux. Zool., February, p. 61.

On his experience of the Little Gull (*Larus minutus*) near Flamborough.

Arrival of Summer Birds. Field, April 12th, p. 499. **Lincolnshire.**

The Swallow [*Hirundo rustica*] arrived at Great Cotes, Ulceby, on the 5th of April.

Wild Duck [*Anas boschas*] **laying in Rook's** [*Corvus frugilegus*] **Nest.** Zool., June, p. 230.

Several Lincolnshire instances cited.

Wild Cat in Lincolnshire. Zool., September, pp. 380-1.

Bullington Wood—where a pair nested in 1870—the last Lincolnshire haunt of the Kite [*Milvus ictinus*].

Ruffs and Reeves [*Machetes pugnax*] **in Lincolnshire.** Zool., November, p. 466.

Flocks near Great Cotes, September 12th and 18th. Other birds also noted as brought over by the strong E. winds.

Probable Occurrence of the Lapp Bunting [*Calcarius lapponicus*] **near Grimsby.** Zool., December, pp. 484-5.

A bird seen close to Grimsby, 8th November, 1883, which the writer had reason to consider, from close observation, was most probably this species in nearly full summer plumage.

Yorkshire, Lincolnshire.

The Birds of the Yorkshire and Lincolnshire Coasts. Rotherham Nat. Soc. Records and Observations, No. 1—July, pp. 2-6.

Condensed but very full report of a lecture delivered to the Society, 24th March.

Ornithological Notes from North Lincolnshire in the autumn and winter of 1883. Zool., May, pp. 184-6.

The season uneventful, and the least interesting experienced for thirty years. The occurrence noted of two Honey Buzzards [*Pernis apivorus*] in September, a Black Redstart [*Ruticilla titys*] in October, on the Yorkshire side of the Humber; and a Roller [*Coracias garrula*] in Lincolnshire, at Muckton, near Louth. Also notes on the dates of arrival of the autumn migratory birds.

Notes from the Humber in the Autumn of 1884. Field, November 22nd, p. 716.

Long article, with detailed observations on numerous birds observed in Yorkshire and Lincolnshire, September and October.

In Upper Coquetdale. Field, August 2nd, p. 152. **Northumberland.**

An interesting and detailed account of the natural history, principally ornithology.

Notts., Yorkshire.

The Nesting of the Tufted Duck [*Fuligula cristata*] **in Nottinghamshire.** Field, November 1st, pp. 596-597.

Long article, describing the Notts. breeding haunts. Refers to the Yorkshire records, to numerous other Notts. birds, &c., and also to the contents of Mr. J. Whitaker's collection.

WILLIAM BLENKINSOPP COULSON. **Northumberland.**

Starlings [*Sturnus vulgaris*] **breeding in January.** Land and Water, January 5th, p. 17.

One with young on the 1st January. Third hatching since summer.

A. N. CURZON. **Derbyshire.**

Bittern [*Botaurus stellaris*] **in Derbyshire.** Field, February 16th, p. 205; repeated February 23rd, p. 276.

Shot in some rushes by side of a brook, at Mercaston, near Derby, December 15th, 1883.

A. G. L. D. (Sessay). **Yorkshire.**

Corncrake [*Crex pratensis*] **lighting in a Tree.** Field, August 2nd, p. 153.

Though he has never seen a Corncrake in a tree, he has this year twice observed the Redshank [*Totanus calidris*] do so.

J. N. D.

Curious Nesting Place. Nat. World, May, i. 79. **Lincolnshire.**

A Robin's [*Erithacus rubecula*] nest in a teapot, Osbournley, Lincolnshire.

N. F. DOBREE. **Yorkshire.**

Eggs of Pied Wagtail [*Motacilla lugubris*]. Naturalist, June, ix. 194.

Thirteen eggs in a single nest at Hessle, East Yorkshire.

W. DUCKWORTH (Carlisle). **Cumberland.**

Willow Wrens [*Phylloscopus trochilus*]. Field, August 23rd, p. 263.

Discussion of the question whether there are two varieties or species.

W. D[UCKWORTH]. **Cumberland.**

Birds Notes [*sic*] **from Carlisle.** Land and Water, September 13th, p. 270.

Varieties of the Meadow Pipit (*Anthus pratensis*) and Sand Martin (*Cotile riparia*) referred to. Birds passing down the Solway on their autumnal migration, Greenshank [*Totanus glottis*], Green Sandpiper [*Totanus ochropus*], Curlew Sandpiper [*Tringa subarquata*], Black-tailed Godwit [*Limosa ægocephala*], Turnstone [*Strepsilas interpres*], and Reeve [*Machetes pugnax*], all having been got during the first week of September.

T. F. THISELTON DYER. **Lancashire.**

Natural History Folk-lore Notes. Land and Water, July 19th, p. 63-64.

This long and interesting article contains a reference to a Lancashire tradition that Rooks [*Corvus frugilegus*] always begin to build on the first Sunday in March.

EDITOR OF FIELD. **Yorkshire.**

Singular Accident to a Sandpiper [*Tringa alpina*]. Field, March 15th, p. 385.

A Dunlin (*T. alpina*) picked up on the Yorkshire coast, by Sir R. Payne Gallwey, was starved to death. A cockleshell had closed upon the bird's beak so tightly as to muzzle it completely, and prevent it feeding.

EDITOR OF NATURAL HISTORY JOURNAL. **Notts, Yorks., Lancsh., Cumb.**

Summer Migrants, 1884. Nat. Hist. Journ., June 15th, viii. 98.

A tabulated series of the dates of arrival, with averages, of summer birds at Mansfield, Barnsley, York, Scarborough, Garstang, Silloth, and Leeds; with remarks.

EDITOR OF NATURAL HISTORY JOURNAL. **Yorkshire.**

Kingfishers [*Alcedo ispida*]. Nat. Hist. Journ., December 15th, viii. 179.

Unusually plentiful this season near York and elsewhere.

ELLAND-CUM-GREETLAND NATURALISTS' SOCIETY. **Yorkshire.**

Report of Meeting. Naturalist's World, May, i. 77.

Field-notes relating to common species of birds.

GEORGE W. ESKHOLME. **Yorkshire.**

Large Colony of House Martins [*Chelidon urbica*]. Field, September 13th, p. 396. Nests of the House Martin. Naturalist's World, October, i. 180.

On August 12th were noted on an uninhabited house at Hartwith, in Nidderdale, 46 nests within nine yards.

W. D. J. F. **Cumberland.**

Arrival of Spring Migrants [at Carlisle]. Land and Water, May 17th, p. 460.

Sand Martin [*Cotile riparia*], March 23rd; Willow Wren [*Phylloscopus trochilus*], April 6th; Redstart [*Ruticilla phœnicurus*], April 7th; Chiffchaff [*Phylloscopus rufus*], April 8th; Swallow [*Hirundo rustica*], April 9th; Tree Pipit [*Anthus trivialis*] and Whitethroat [*Sylvia rufa*], April 11th; Common Sandpiper [*Tringoides hypoleucos*], April 13th; Cuckoo [*Cuculus canorus*], (heard and seen) April 14th; Corncrake [*Crex pratensis*], shot April 17th, not in cry till 28th; Blackcap [*Sylvia atricapilla*], April 27th; Pied Flycatcher [*Muscicapa atricapilla*] (reported), April 27th; Swift [*Cypselus*

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Contents:

PAGE

Bibliography of 1884 (PART II., BIRDS, continued) .. ..193 to 200

Strasburger's New Investigations on the Process of Fertilisation in Phanerogams—*Thomas Hick, B.A., B.Sc.* (continuation) .. .. 203 to 205

Micro-Palæontology of the Northern Carboniferous Shales—*G. R. Vine* .. ..207 to 212
(IV. Polyzoa, Entomostraca, Gasteropoda, and Miscellaneous Organisms of the Skelly Gate Shales: Northumberland).

Notes on Mammalia:— 202
The Noctule Bat in Co. Durham—*W. Denison Roebuck, F.L.S.*; Whiskered Bat near Pateley Bridge—*James Ingleby*; Capture of a Badger in Nidderdale—*Wm. Storey*; Squirrel Attacked by a Small Bird—*A. W. Price*; Squirrel's Method of Carrying its Young—*Geo. W. Oldfield, M.A., F.L.S.*

Ornithological Notes:— 201
Bird-notes from Nidderdale—*W. Storey*; Notes from Rainworth, Notts.—*J. Whitaker, F.Z.S.*; Notes from Whitby—*Thomas Stephenson*; Birds near Halifax—*F. G. S. Rawson*; Missel Thrush—*H. Wallis Kew*; Grey Lag Goose in Nottinghamshire—*J. Whitaker, F.Z.S.*

Note on Coleoptera:— 206
Astynomus ædilis at Wakefield—*E. B. Wrigglesworth.*

Notes on Lepidoptera:— 206
Erastria fuscula: a species new to Yorkshire—*W. E. Brady*; the Lepidopterous Fauna of Lancashire and Cheshire—*Herbert Goss, F.L.S.*

Geological Notes:— 212, 213
A Buried Valley—*Osmund W. Jeffs*; Drift-Coal in Durham—*Herbert Prodham.*

Yorkshire Naturalists' Union: Annual Meeting at Doncaster 213, 214

Notes and News 214, 215

Meterological Returns for January, 1885 216

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*Report of the Watson Botanical Exchange Club, 1884-85. [The Club.
*North British Agriculturist, Oct. 29th, 1884. [The Publishers.
2nd Ann. Rep. of the Museum of the City of Milwaukee, Oct. 1884. [The Trustees.
Journal of the New York Microscopical Society, Feb. 1885. [The Society.
*Forestry, a Jour. of Forest and Estate Management, March 1885. [The Publishers.
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The Illustrated Science Monthly for March 1885. [D. Bogue, publisher.
*The Young Naturalist (edited by J. E. Robson), Jan., Feb., and March 1885. [Ed.
*The Journal of Conchology, Jan. 1885. [The Editor.
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EXCHANGES.

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Shells.—Fine Collection (750 species, British and Foreign Land, Freshwater, and Marine), for sale (£18), or Exchange for a good microscope.—C. T. Musson, Private Road, Mapperley, Nottingham.

Coleoptera.—Duplicates—*Bembidium 5-striatum* and *B. lunatum*. Desiderata—other local Geodephaga or Butterflies.—R. Wilding, 40, Downing Street, Liverpool.

Duplicates: Lepidoptera.—I have a great many common duplicates in Lepidoptera I should be glad to give to beginners (but on this condition, they must fetch them, as I cannot undertake to pack them). I am at home any afternoon, but a post card would make it more certain.—Jno. Harrison, 7, Gawber Road, Barnsley.

The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, etc., is **John Eggleston, Park Place, Sunderland.** Lists free.

apus], April 28th; House Martin [*Chelidon urbica*] and Wood Wren [*Phylloscopus sibilatrix*], April 30th; Sedge Warbler [*Acrocephalus phragmitis*] and Grasshopper Warbler [*Locustella nævia*], May 6th; Common Tern [*Sterna fluviatilis*], May 9th. Other notes given.

THEO. FISHER. **Yorkshire.**

Blue-throated Warbler [*Cyanecula*, ? species] **on Spurn Head.** Zool., October, p. 430.

Two seen (one shot), September 15th; three more (one a male of the second year, the others birds of the year) procured on the 18th.

THOMAS FORD.

Notes from North Lincolnshire. Field, June 14th, p. 810. **Lincolnshire.**

The notes refer to Nightingale [*Daulias luscinia*], near Louth; Cuckoo [*Cuculus canorus*], singing at night; Thrushes [*Turdus musicus*], increasing in number; Woodpeckers more numerous; Curlews [*Numenius arquata*], near Caistor; Goldfinches [*Carduelis elegans*], scarce; Gullery near Manby; Heronry in neighbouring woods; Kingfishers [*Alcedo ispida*] observed; Jays [*Garrulus glandarius*], very common in Pelham Woods; Swallows [*Hirundo rustica*], arrived early, April 10th; Corncrake [*Crex pratensis*], very abundant.

Ornithological Notes from North Lincolnshire. Field, December 6th, p. 771.

Migratory birds unusually numerous this season. Food for them very plentiful. Fieldfares [*Turdus pilaris*], Redwings [*Turdus iliacus*], Larks [? *Alauda arvensis*] Starlings [*Sturnus vulgaris*] in flocks; Thrushes [*Turdus musicus*], have fully resumed their normal numbers. Goldfinches [*Carduelis elegans*] very numerous, Bulfinches [*Pyrrhula europæa*] somewhat rare, Woodpeckers and Jays [*Garrulus glandarius*] somewhat plentiful in the Pelham Woods, Wood Pigeons [*Columba palumbus*]—packing in hundreds; Snipe [*Gallinago cœlestis*], Woodcock [*Scolopax rusticula*], Kingfisher [*Alcedo ispida*], Heron [*Ardea cinerea*], seen.

J. FOUNTAIN. **Yorkshire.**

A Pure White Herring Gull [*Larus argentatus*]. Field, October 4th, p. 487.

One shot in Filey Bay, September 26th.

JOHN W. FOWLER. **Lancashire.**

Blackbird [*Turdus merula*] **with Three Broods.** Field, June 28th, p. 887.

At Eastham, near Liverpool.

EDWARD J. GIBBINS.

Pied Lapwing [*Vanellus vulgaris*]. Sci. Goss., August, p. 190. **Yorkshire.**

Two York occurrences are noted.

Gulleries. Field, March 1st, p. 280. **Northumberland, Yorkshire.**

One at Hallypike Lough, Northumberland, a few miles W. from Chollerford. In June, 1882, there were at least 500 adult Gulls [*Larus ridibundus*] there.

Further particulars given as to the Yorkshire Gulleries at Riccall and Strensall. About twenty pairs at Riccall in 1881, and only three or four pairs in 1882. Extensive draining operations in 1881 probably led to this diminution. The Strensall colony is at present a very weak and small attempt to refound a settlement, a few pairs nesting in 1881, 1882, and 1883.

T. J. GOLDSMITH. **Notts.**

'Local Observations' [at Nottingham]. Midl. Nat., February, vii. 53.

Young birds of Hedge Sparrow [*Accentor modularis*] taken in Nottingham gardens in January.

WILLIAM GREEN. **Durham.**

Bird Notes during the Winter of 1880 and 1881. Nat. Hist. Trans. Northumberland, Durham, and Newcastle, 1884, viii. 28-30.

Notes referring to numerous familiar species, made at Thornely House, Lintz Green.

J. H. GURNEY, JUN. **Notts.**

On the 'Hairy' Variety of the Moorhen (*Gallinula chloropus*). Trans. Norf. and Norw. Nat. Soc., 1884, iii. 581-587.

On p. 586 the British occurrences are tabulated, whereby it appears that the ninth example was a Nottinghamshire one, now in Mr. Whitaker's collection of varieties.

Food of Sparrows [*Passer domesticus*]. Zool., Oct., pp. 428-9.

Recorded as feeding in Notts. upon apple-feeding larvæ of *Teras contaminana*.

Remarks on the Occurrence of the Egyptian Nightjar [*Caprimulgus ægyptius* Licht.] **in Nottinghamshire.** Ibis, 1884, 5th series, ii. 173-4.

Record of occurrence near Mansfield, on the 23rd of June, 1883. The bird is now in the collection of Mr. Joseph Whitaker, who had it in the flesh. The distribution of the species given, and the occurrences in Europe cited.

Northumberland, and Yorkshire or Durham.

On the Occurrence of a Flock of the Arctic Blue-throated Warbler (*Erithacus* [*Cyanecula*] *suecica*) **in Norfolk.** Trans. Norf. and Norw. Nat. Soc., 1884, iii. 597-601.

The simultaneous occurrence of other examples is mentioned, one shot on the Northumberland coast, September 22nd, 1883, and one identified but not shot the day before, at Tees mouth.

S. R. HALLAM.

Curious Bird. Nat. World, June, i. 98. **Derbyshire.**

Killed at Newton, near Burton-on-Trent, August, 1883; said to be a hybrid between Song Thrush [*Turdus musicus*] and Starling [*Sturnus vulgaris*].

S. R. H[ALLAM]. (Burton-on-Trent.) **Derbyshire.**

Great Grey Shrike [*L. excubitor*]. Nat. World, September, i. 159.

Noticed at Stapenhill, in June. A female Kingfisher [*Alcedo ispida*] also recorded, killed by flying against a glass window.

JOHN HANCOCK. **Durham.**

Occurrence of Sabine's Gull, Larus Sabini, Leach, in the County of Durham. Nat. Hist. Trans. Northumberland, Durham, and Newcastle, 1884, viii. 27-28.

Shot at Seaham Harbour, October 11th, 1879. The specimen was in its first plumage.

ISAAC HARDING.

Migratory Birds on the Yorkshire Moors. Zool., May, pp. 190-191. **Yorkshire.**

Field notes of numerous species on the moors about Marsden and Huddersfield, including Stonechat [*Pratincola rubicola*], Oyster Catcher [*Hæmatopus ostralegus*], Hawfinch [*Coccothraustes vulgaris*], Crossbills [? *Loxia curvirostra*], Brambling [*Fringilla montifringilla*], and Water Rail [*Rallus aquaticus*].

JAMES HARDY. **Northumberland.**

Report of the Meetings of the Berwickshire Naturalists' Club for the year 1883. Proc. Berw. Nat. Club, x. 258-260-280-281-284.

Ornithological notes made at Holy Island, June 27th, and at Middleton Hall.

J. E. HARTING. **Lancashire, Northumberland, Yorkshire, Lincolnshire.**

Gulleries. Field, February 16th, p. 204.

This paper gives accounts of Gulleries on Pilling Moss and on Walney Island, in Lancashire; at Fallowlees, Harbottle Tarn, Sweethope, Palinsburn, Dunse Castle, and Paston Lake, near Yetholm, Northumberland; at Hornsea Mere, Riccall Common, Thorne Waste, Strensall Common, and Newton Fell, in Yorkshire; at Twigmoor, near Brigg, and on the neighbouring estate at Manton, Lincolnshire.

Naturalist,

J. E. HARTING. **Durham.**

Meaning of the word 'Gaunt' applied to the Great Crested Grebe. Zool., August, p. 350.

A philological note; refers incidentally to the tenure of certain lands in Co. Durham, A.D. 1343-1361, by payment of one 'wode henne' yearly.

HECKMONDWIKE NATURALISTS' SOCIETY.

Reports of Meetings. Naturalist, March, June, ix. 140 and 196. **Yorkshire.**

Records of ornithological observations in Yorkshire.

W. HEWETT.

Terns and Gulls inland in Yorkshire. Zool., August, p. 343. **Yorkshire.**

Notes on Common Terns (*Sterna fluviatilis*) and Blackheaded Gulls (*Larus ridibundus*) at Strensall Common.

R. G. HOPKINSON. **Yorkshire.**

Quail [*Coturnix communis*] **on the Yorkshire Wolds.** Field, Oct. 18th, p. 530.

Not such a *rara avis* on the Wolds as Mr. Romyn thinks. Some years ago writer shot three at North Burton, eight miles from Nafferton. One shot in the adjoining parish of Rudston. Thirty years ago not considered rare when shooting about six miles from Bridlington.

J. B. HOWARD (Halifax).

Plovers' Eggs. Field, February 2nd, p. 165. **Yorkshire?**

Records a nest with five eggs, of the Green Plover (*Vanellus cristatus*), found May 14th, 1883—place not stated.

ROBERT J. HOWARD. **Yorkshire, Lancashire.**

Reported Occurrence of Cranes [*Grus communis*] **near Clitheroe.** Zool., November, pp. 470-1.

Two seen on the 25th August, by R. Milne Redhead, flying over Bolton-by-Bowland, Yorkshire, S.S.E., in the direction of Lancashire, and close to the county boundary.

Lancashire.

Breeding of the Ruff [*Machetes pugnax*] **in Lancashire.** Zool., November and December, pp. 466-7 and 490.

Corrects Pennant's reference, and gives evidence in support of the breeding of this species at Martin Mere within the last fifty years.

HUDDERSFIELD NATURALISTS' SOCIETY. **Northumberland, Notts.**

Reports of Meetings. Naturalist, February, ix. 123, March, ix. 140.

Records of occurrences of birds in Northumberland and Notts.

HULL FIELD NATURALISTS' SOCIETY.

[**Report of Excursion to Hornsea.**] Naturalist, July, ix. 215-6. **Yorkshire.**

Notes of birds observed there on the 14th of June.

NORMAN HYDES.

Cuckoo [*Cuculus canorus*]. Nat. World, October, i. 180. **Yorkshire.**

An adult female shot in Endcliffe Wood, near Sheffield, August 18th.

P. INCHBALD. **Yorkshire.**

Arrival of Summer Birds. Field, April 12th, p. 499; April 19th, p. 560; April 26th, p. 506; May 3rd, p. 597; May 10th, p. 651.

Dates of arrival are noted as follows:—Wheatear [*Saxicola œnanthe*], Pateley Bridge, Nidderdale, March 22nd; at Harrogate, the Chiffchaff [*Phylloscopus collybita*], March 24th; Willow Wren [*P. Trochilus*], April 4th; Tree Pipit [*Anthus trivialis*], April 9th; Cuckoo [*Cuculus canorus*], April 10th; Sand Martin [*Cotile riparia*], April 14th; Swallow [*Hirundo rustica*], April 16th; Redstart [*Ruticilla phœnicurus*], April 19th; Nightingale [*Daulias luscinia*], April 20th; Blackcap [*Sylvia atricapilla*], April 21st: and at Hornsea, the Greater Whitethroat [*Sylvia rufa*], April

29th; Lesser Whitethroat [*Sylvia curruca*], April 30th; Sedge Warbler [*Acrocephalus phragmitis*], May 1st; Wood Warbler [*Phylloscopus sibilatrix*], May 5th; and at York, the Swift [*Cypselus apus*], on the 7th of May.

Nest of the Grasshopper Warbler [*Locustella nævia*]. Field, Aug. 16th, p. 246.

Not very uncommon near Harrogate. A nest, found 6th August, is described.

Breeding of the Hawfinch [*Coccothraustes vulgaris*] **in Yorkshire.** Field, August 23rd, p. 263.

A pair bred in the Orchard at Rudding Park, near Knaresborough, in spring, 1884.

G. W. J.

Gulleries. Field, February 23rd, p. 276. **Cumberland.**

Harting has stated there are none in Cumberland or Westmoreland; there is one in the former county, at Jenkin's Cross, about five miles E. of Wigton.

Fanny E. Jackson. **Lancashire.**

Garstang. Nat. Hist. Journ., February 15th, viii. 18; April 15th, viii. 60.

Flocks of Plovers seen all winter. Phenological notes on various other birds.

Jno. J. Jackson. **Yorkshire.**

Woodcocks [*Scolopax rusticula*] **near Whitby.** Land and Water, November 15th, p. 477.

The earliest date on which one was shot was October 29th. In 1883 the first appearance was during the last part of November.

Thomas Jackson.

Gulleries. Field, March 1st, p. 280. **Lancashire.**

The Gullery on Pilling Moss no longer exists—land now all cultivated. About three miles E. is a Gullery on Winmarleigh Moss, where the Gulls nest in immense numbers. The Lesser Blackbacked Gull [*Larus fuscus*] used to breed there abundantly; but since the Blackheads [*Larus ridibundus*] have been protected, they have completely driven away the Lesser Blackbacked Gulls. There is another small Gullery about two miles from the village of Scorton.

F. Kirton.

Thirsk, North Yorkshire. Nat. Hist. Journ., May 15th and June 15th, viii. 80 and 97.

Phenological observations on birds' eggs noted in the spring of 1884.

R. B. L. **Westmoreland.**

Bittern [*Botaurus stellaris*] **in Westmoreland.** Field, December 20th, p. 843.

One shot December 3rd, close to Whinfell Tarn, near Kendal.

Robert Lee.

Additions to the Yorkshire Fauna. Field, May 31st, p. 737. **Yorkshire.**

A female Hen Harrier [*Circus cyaneus*] shot on Smilesworth [? Snailesworth] Moor, November 16th, 1883.

Leeds Naturalists' Club.

Report of Meeting. Naturalist, June, ix. 197. **Yorkshire.**

Records of Yorkshire birds.

B. B. L[e] T[all]. **Yorkshire.**

The last hours of a Gold-crest [*Regulus cristatus*]. Nat. Hist. Journ., October 15th, viii. 140.

One caught at the Birley Vale Collieries, near Sheffield.

T. Lister. **Yorkshire.**

Natural History Notes for the Barnsley and South Yorkshire District. Naturalist, January, ix. 104, 106; February, ix. 118; and May, ix. 177. Nat. Hist. Journ., February 15th, viii. 18; April 15th, viii. 60; and June 15th, viii. 97.

Chronological field-notes on birds observed in the autumn of 1883 and the early part of 1884.

J. Lovell.

Starlings [*Sturnus vulgaris*]. Nat. Hist. Journ., May 15th, viii. 80. **Yorkshire.**

Thousands roost every winter night in a larch plantation near Driffield.

H. A. Macpherson. **Cumberland.**

Grey Shrike [*Lanius excubitor*] **in Cumberland.** Field, February 16th, p. 205.

An adult male Great Grey Shrike shot at Kirklington, December, 1883. The writer observed a female near Carlisle in January, 1884, which was subsequently shot, and appears intermediate between *L. major* and *L. excubitor*. He observed another about five miles from Carlisle, on 6th February. In the same copse a Fieldfare was found impaled and partly eaten on the 8th.

Grey Shrike [*Lanius excubitor*] **near Carlisle.** Zool., March, p. 114.

A female, intermediate between *Lanius major* and *L. excubitor*, was shot close to Carlisle, 16th Janurary. Mr. Macpherson has not yet seen a local thoroughbred *L. major*.

Long-tailed Duck [*Harelda glacialis*] **in Cumberland.** Zool., March, p. 115.

A fine male *Harelda glacialis* seen several days in January, on Monkhill Lough, about three miles from the Eden estuary.

Ornithological Notes from Carlisle. Zool., April, pp. 127-130.

The notes, given in chronological order, refer to multitudinous observations made during 1883.

Plover's [**Peewit's** (*Vanellus vulgaris*)] **Nest with Five Eggs.** Field, May 3rd, p. 597.

In the Carlisle district. All the eggs were of the same colour.

Summer Migrants at Carlisle. Field, May 3rd, p. 597.

Sand Martin [*Cotile riparia*], March 23rd; House Swallow [*Hirundo rustica*], April 9th; Willow Wren [*Phylloscopus trochilus*], April 6th; Chiffchaff [*Phylloscopus collybita*], April 8th; Redstart [*Ruticilla phœnicurus*], April 7th; Cuckoo [*Cuculus canorus*], seen and heard, April 14th; Corncrake [*Crex pratensis*], shot, April 17th; Common Sandpiper [*Tringoides hypoleucos*], April 13th; a single White Wagtail [*Motacilla alba*], on April 15th, but may have arrived earlier; Tree Pipit [*Anthus trivialis*] arrived April 11th, but not generally diffused till April 21st; a single Swift [*Cypselus apus*], April 28th; Goldeneyes [*Clangula glaucion*], and Fieldfares [*Turdus pilaris*], observed on the 28th April.

Varieties near Carlisle. Zool., June, p. 228.

Chaffinches [*Fringilla cœlebs*], Blackbird [*Turdus merula*], Hedge Warbler [*Accentor modularis*], Sparrows [*Passer domesticus*], mostly pied.

[Manchester] Lower Mosley Street Schools Natural Hist. Society.

Report. October, 15 pages. **Yorkshire.**

Notes on birds observed at Malham and Gordale Scar on the 22nd of June.

J. F. Masham.

Rare Birds in Lincolnshire. Zool., February, pp. 70-71. **Lincolnshire.**

Male Osprey [*Pandion haliaëtus*] killed at Hartsholme; adult female Kite [*Milvus ictinus*], shot near Skegness; two female Peregrines [*Falco peregrinus*], shot at Branston; Common Buzzard [*Buteo vulgaris*], numerous; a female Honey Buzzard [*Pernis apivorus*], from Gainsborough; and a Male Hoopoe [*Upupa epops*], shot at North Hykeham.

A. J. Matthews. **Notts.**

Golden Oriole [*Oriolus galbula*] **in Nottinghamshire.** Field, May 31st, p. 737; Land and Water, May 31st, p. 508.

A male appeared near Worksop, on the 15th May. Probable escape.

R. Morton Middleton.

Pied Jackdaw [*Corvus monedula*]. Zool., May, p. 197. **Durham.**

Noted for some time at Castle Eden, Durham, and exhibited to Linnean Society, April 3rd.

F. S. M[itchell]. **Lancashire, Westmoreland.**

Provincial Name of Bird. Field, June 21st, p. 879.

Quotation from Camden's Britannia, Gough's (2nd) ed., 1806, iii. 406 (translated from the 1507 ed.)—that among the Waterfowl frequenting Windermere are 'gravyes.'

Oliver Mitchell.

Birds. Young Nat., July, vi. 192. **Yorkshire.**

Two Cuckoo's eggs in a single Meadow Pipit's [*Anthus pratensis*] nest, presumably near Bingley.

F. O. Morris. **Northumberland.**

The Cuckoo [*Cuculus canorus*], **etc.** Land and Water, January 5th, p. 17.

Notes made in Northumberland. Nesting of Rook, in December, 1883, at Felton Mills, also noted.

Young Rooks [*Corvus frugilegus*] **in December.** Land and Water, February 9th, p. 129.

At Felton, near Newcastle.

Cumberland.

The Raven [*Corvus corax*] **in Cumberland.** Land and Water, February 2nd.

Flock of four noted by Mr. Amos near the Troutbeck Valley.

Yorkshire.

Anecdotes of Animals and Birds. Land and Water, May 17th, p. 460.

Includes one of a tamed Starling [*Sturnus vulgaris*] at Langton Hall, near Northallerton.

S. L. Mosley. **Notts.**

A Visit to Rainworth Lodge, Notts. Young Nat., March, v. 83-5.

Notes on the birds in Mr. Whitaker's collection and in his grounds, including the Egyptian Nightjar [*Caprimulgus ægyptius*].

Lancashire, Notts.

Bird Protection and its Relation to Insect Life. Young Nat., July, v. 188-191.

Remarks on former destruction of Larks at Formby, Lancashire, and on Tits preying on *Hybernia* at Rainworth, Notts.

Durham, Northumberland, Notts., Lincolnsh., Yorksh., Lancash.

British Birds, their Nests and Eggs. Young Nat., February, v. 54-56; March, 80-83; April, 114-115; May, 131-134; July, 185-187; and August, 209-210.

Notes upon *Parus cristatus*, north of England; *Parus ater*, co. Durham; nests of Marsh Tit [*Parus palustris*], at Prudhoe-on-Tyne, and at Rainworth, Notts.; *P. biarmicus*, in Lincolnshire; Morris's Huddersfield record of the latter bird condemned; the northern [? continental] form of *P. caudatus* at Tynemouth: varieties of the Pied Wagtail [*Motacilla lugubris*] obtained at Leeds and in Notts.; the occurrence of the Grey Wagtail (*M. melanope*) in the north of England; the Rock Pipit (*Anthus obscurus*) recorded as very numerous at Flamborough Head; and the Wood Lark (*Alauda arborea*) noted for Lancashire and East Yorkshire.

HY. MURRAY. **Lancashire or Westmoreland.**

Rare Birds at Carnforth. Young Nat., March, v. 87.

Pintail Duck [*Dafila acuta*], male and female, January; Long-tailed Duck (*Harelda glacialis*), fine male, 14th February; all shot in the bay.

J. N. **Northumberland.**

Singular Pugnacity of a Wild Duck [? *Anas boscas*]. Field, Dec. 13th, p. 840.

In July a Wild Duck, which was accompanied by six or seven ducklings, attacked and killed a Carrion Crow [*Corvus corone*], on the Tweed, at Norham.

T. H. NELSON.

Snipe [*Gallinago cælestis*] **Perching.** Zool., January, pp. 28-9. **Yorkshire.**

Observation made in Ryedale, North Yorkshire.

Lancashire.

Velvet Scoter [*Œdemia fusca*] **near Manchester.** Zool., April, p. 143.

One shot on Rhodes Reservoir, November, 1883, by Dr. Kershaw.

Yorkshire.

Sooty Shearwater [*Puffinus griseus*] **at Redcar.** Zool., April, pp. 147-8 and 157.

Puffinus griseus, one shot September 17th, 1883, two miles off Redcar. Exhibited to Zool. Society, March 4th. The record is erroneously stated to be new for Yorkshire.

Pomatorhine Skua [*Stercorarius pomatorhinus*] **at Redcar.** Field, October 11th, p. 499.

One shot October 2nd. Of the black variety, first recorded by writer in 1879.

Black Pomatorhine Skua [*Stercorarius pomatorhinus*] **at Redcar.** Zool., November, p. 469.

One of this melanic form shot at sea off Redcar, October 4th. The occurrence of numerous other birds at Redcar is also recorded.

Arrival of Woodcocks [*Scolopax rusticula*]. Field, Nov. 1st, p. 597.

First arrivals at Redcar were October 6th. Seasonal notes on numerous other species are given—viz., on Short-eared Owls [*Asio accipitrinus*], Hooded Crow [*Corvus cornix*], Green Plover [*Vanellus vulgaris*], Larks, Thrushes, Redwings [*Turdus iliacus*], Goldcrests [*Regulus cristatus*], Wheatear [*Saxicola œnanthe*], Snow Bunting [*Plectrophanes nivalis*], and Ring Ouzel [*Turdus torquatus*]; being chronological notes on the autumnal migration.

Partridges [*Perdix cinerea*] **under domestication.** Field, Nov. 1st, p. 597.

At Easby Hall, Cleveland. Particulars given.

REV. J. B. NODDER.

Arrival of Summer Birds. Field, May 10th, p. 651. **Derbyshire.**

Arrivals at Chesterfield:—Cuckoo [*Cuculus canorus*], April 30th; Swift [*Cypselus apus*], and Landrail [*Crex pratensis*], May 5th.

A. M. NORMAN. **Northumberland.**

Address to . . the Tyneside Naturalists' Field Club . . May 27th, 1881. Nat. Hist. Trans. Northumberland, Durham, and Newcastle, viii. 68. (1884.)

Notes on birds observed at the field meetings; at Corbridge-on-Tyne, June 6th, 1880.

J. O. J. P.

Arrival of Summer Birds. Field, May 10th, p. 651. **Cheshire.**

The Pied Flycatcher [*Muscicapa atricapilla*] arrived at Thornleigh, Chester, May 5th.

J. E. PALMER.

Lapwing [*Vanellus vulgaris*] **perching.** Zool., February, p. 69. **Yorkshire.**

One perched on stone wall, near Appletreewick, Wharfedale, July 1875.

H. T. Parke. **Lancashire.**

Thrush [*Turdus musicus*] **with three broods in succession.** Field, May 24th, p. 702.

Four young Thrushes left the nest April 13th, and five more hatched May 3rd. There are now three eggs in the nest.

C. A. P[arker].

A Cumberland Marsh. Field, May 3rd, pp. 596-7. **Cumberland.**

The article, which is a lengthy and interesting one, relates to the birds noted at Drigg Common, Point, or Hawes, as it is variously called, and includes, among others, notes on the Oyster Catcher [*Hæmatopus ostralegus*], Heron [*Ardea cinerea*], Greater Blackbacked Gull [*Larus marinus*], Woodcock [*Scolopax rusticula*], Lesser Tern [*Sterna minuta*], Sandwich Tern [*Sterna cantiaca*], Ringed Plover [*Ægialitis hiaticula*], Redshank [*Totanus calidris*], Shelldrakes [*Tadorna vulpanser*], Stockdove [*Columba œnas*], Wigeon [*Mareca pearelope*], Brent Goose [*Bernicla brenta*], Wild Swan [*Cygnus* ? species], Goldeneye [*Clangula glaucion*], Longtailed Duck [*Harelda glacialis*], Eider Duck [*Somateria mollissima*], Goosander [*Mergus merganser*], Cormorant [*Phalacrocorax carbo*], Manx Shearwater [*Puffinus anglorum*], Forktailed Petrel [*Procellaria leucorrhoa*], Storm Petrel [*Procellaria pelagica*].

Meaning of the name 'Ravenglass.' Field, May 10th, p. 650.

Old MS. record quoted of a White Raven [*Corvus corax*] in Cumberland.

J. W. Parsons. **Northumberland.**

The Ornithology of the Farne Islands. 'Records and Obs.' of the Rotherham Nat. Soc., No. 1 (July 1884), pp. 15-16.

In addition to a recapitulation of the species—which are divided into resident and non-resident—well known to frequent these islands, with notes on the dates of their nesting; a few birds which visit them on migration are also mentioned, including the Hoopoe (*Upupa epops*).

Rooke Pennington.

Game Killed on Railways. Field, February 2nd, p. 165. **Lancashire.**

Both winged and ground game (particularly Hares, Rabbits, Pheasants [*Phasianus colchicus*], Partridges [*Perdix cinerea*], and Grouse [*Lagopus scoticus*]) are constantly being destroyed by passing trains on Chat Moss, although the game must there be familiar with the danger.

T. Pickin. **Lancashire.**

Solitary Snipe [*Gallinago major*] **in Lancashire.** Field, October 4th, p. 487.

One shot September 20th, between Warrington and Manchester. Weight 8 oz. Flushed out of standing beans.

T. N. P[ostlethwaite]. **'North of England.'**

Birds Breeding in Rabbit Holes. Field, May 24th, p. 702.

In the North of England the writer has several times found Sheldrakes' [*Tadorna cornuta*] nests in Rabbit burrows that had apparently been recently used.

H. Newman Pullan. **Yorkshire.**

Nightingales [*Daulias luscinia*] **in York[shire].** Science Gossip, July, p. 159.

Two near Harrogate in 1884.

G. W. Pullen. **Derbyshire.**

The Birds of Derby and Neighbourhood. Young Nat., Jan., v. 30-34.

This instalment extends from *Sylvia modularis* to the end, and includes 110 species.

A. R. **Westmoreland, Lancashire.**

Provincial Names of Birds. Field, July 26th, p. 117.

The Goosander [*Mergus merganser*] is referred to as having been not an uncommon bird on Lake Windermere so lately as fifty years ago.

(*To be continued.*)

ORNITHOLOGICAL NOTES.

Notes from Rainworth, Notts.—Grey Crows (*Corvus cornix*) at Rainworth, Notts. This is always a great place for Grey Crows in the winter, but this year we have more than ever I remember; my neighbour's keeper counted forty in one field at once, and at night more than sixty fly over the house here to roost in some fir plantations on the forest.

Peregrine Falcon (*Falco peregrinus*). A very fine female was shot at Shelford, near Nottingham. It had struck at a Lapwing, which, to avoid it, settled on the Trent, the stream carrying it down, and the Hawk following. A sportsman seeing this, waited till they came opposite, when he shot the Falcon. It was in beautiful plumage, and about the largest I think I ever remember having seen.

Great Tits (*Parus major*). In the summer I wrote to the *Naturalist* about the Great Tits feeding their young ones on bees. Well, either they have taken to eating them themselves, or the young ones have remembered the delicacy, for since the cold weather, when no bees venture out, they have been trying to get into the hive, and have pecked away a part of the hole, so much so that we have had to put wire to keep them off.—J. WHITAKER, Rainworth Lodge, Notts., January 22nd, 1885.

Bird-notes from Nidderdale.—On Friday, January 30th, a male Scaup Duck (*Fuligula marila*), which had been shot in the wing, was captured on the Nidd, near Pateley Bridge, and brought to me. A few days previously I noticed a pair of the Common Crossbill (*Loxia curvirostra*) in a fir plantation near Pateley. The Ripon Museum contains a pair which were shot at Ramsgill, near Pateley, by Mr. Robinson, of Ripon, several years ago. In September 1855, Mr. E. Yorke shot a Green Sandpiper (*Tringa ochropus*) on Heathfield Moor, near Pateley Bridge; the specimen is still in that gentleman's collection at Bewerley Hall.—WM. STOREY, Pateley Bridge, February 10th, 1885.

Notes from Whitby.—November 20th, 1884.—Little Grebe (*Tachybaptes fluviatilis*) shot near Ruswarp.

January 2nd, 1885.—Large Iceland Gull (*Larus leucopterus*) shot in Whitby Harbour, by Kitching. Its wings said to measure 6 ft. 3 in. from tip to tip. [Do not the measurements indicate that the bird was a Glaucous Gull?—Eds.]

January 7th.—Glaucous Gull (*Larus glaucus*) shot, stuffed by Wilson (immature specimen).

January 22nd.—Coot (*Fulica atra*), shot by Sunley in Whitby Harbour.

January 22nd.—Young Golden Eye Duck (*Clangula glaucion*), shot by Thomas Mennell in Whitby Harbour.—THOMAS STEPHENSON, Whitby, Feb. 13th, 1885.

Birds near Halifax.—In the past summer the various kinds of birds which annually nest in this district have been fairly plentiful. The Moorhen and Sandpiper have both nested, and the Kingfisher has been observed on several occasions. The Grey, and Ray's Wagtail, Redstart, Lesser Redpole, Whinchat, Spotted Flycatcher, Whitethroat, Meadow Pipit, Wheatear, Sand-martin, Land-rail, Kestrel, Jackdaw, Tree Sparrow, and Blackcap Warbler, have all been observed in more or less numbers. Skylarks have been very abundant on the moorlands, and Starlings and Missel Thrushes have appeared in considerable numbers. A Common Scoter was recently shot in this locality.—F. G. S. RAWSON, Thorpe, near Halifax, October 17th, 1884

Missel Thrush (Turdus viscivorus).—For the last three years a pair of these birds have placed their nest in the same bough in a hawthorn tree in a place known as 'Welton Vale,' though in each of the three cases the eggs were taken. In the first two years the hen laid again after all her eggs had been robbed, in one case even after the first eggs had been broken in the nest. Is this behaviour usual on the part of birds of this genus?—H. WALLIS KEW, Louth, 10th January, 1885.

Grey Lag Goose in Nottinghamshire.—On the 16th of this month the keeper at Papplewick Hall shot one of these fine birds on a pond there, and Mr. Walter kindly gave it me. This goose (*Anser ferus*) is now rare, at any rate in these parts, and will be a great addition to my local birds.—J. WHITAKER, Rainworth Lodge, Notts., February 23rd, 1885.

NOTES ON MAMMALIA.

The Noctule Bat in Co. Durham.—In the Newcastle Museum there is a specimen of a Bat which was taken in the year 1836 at Mr. Swinburne's house, between Harton and Cleadon, in the county of Durham, and not far from Newcastle. It was recorded among the donations to the museum as the Serotine: 'A species of Bat (*Vespertilio serotinus*) taken near Cleadon—Mr. A. Swinburne,' 1836 (Trans. Nat. Hist. Soc., 4to, vol. ii.). It also figures as the Serotine in Messrs. Mennell and Perkins' Catalogue of the Mammalia of Northumberland and Durham. The identification is, however, incorrect. Mr. Thomas Southwell, of Norwich, visited the museum last year, and after such inspection as can be given to a specimen in a closed glass case, considered it to be in all probability a Noctule (*Vesperugo noctula*). He wrote me to this effect in September. When, therefore, I visited Newcastle some weeks after I was sufficiently interested to make inquiries on the subject, and found that Mr. Richard Howse, the curator, had investigated the subject, and shared Mr. Southwell's view. He also showed me the specimen, and after examination I fully coincided in their opinion. The specimen was old and much bleached from exposure to light, but it seems to present all the external structural characters of the Noctule.

The settlement of the correct name of the specimen is of interest from a geographical point of view from its being a northward extension of the range of the Noctule, which has not before been satisfactorily recorded for any locality north of the River Tees. Why it should not occur, and commonly too, in the county of Durham, is an enigma; for it is not only widely diffused throughout Yorkshire, but is a common species in that county. Probably, however, our Durham friends will meet with it when they pay more attention to their native species of Bats.—W. Denison Roebuck, Leeds, March 20th, 1885.

Whiskered Bat (Vespertilio mystacinus) at Warsill, near Pateley Bridge.—I lately met with this species at Warsill, in Nidderdale. There was a large colony in a building there. One evening I counted nearly a hundred as they came out to feed. They had begun to come out when I reached the place, and were still coming out when I left. Mr. Roebuck has seen one of the specimens, and confirms my naming.—James Ingleby, Eavestone, near Ripon, July 19th, 1884.

Capture of a Badger in Nidderdale.—Foxes having been very troublesome during the past few weeks, farmers have been driven to protect themselves by placing traps. In one of these a large male Badger (*Meles taxus*) was caught. It measured 3 ft. in length from the nose to the tip of the tail, and weighed 27 lbs. This is the only occurrence of the Badger in this dale on record for the past forty years. At the time of writing the animal is alive and in the possession of its captor. It was taken at Brimham Rocks.—Wm. Storey, March 10th, 1885.

Squirrel attacked by a Small Bird.—At Riding Mill I have several times seen a Squirrel crossing the railway from the woods on one side to those on the other. I am told it has done this every morning and evening for some years past. One night last summer it crossed the line as usual, and ran up into the nearest tree. After going a short distance, it came to a tree in which a small bird (a Chaffinch I think it was) had its nest. On its approach the bird grew very excited, and attacked the Squirrel most vigorously, flying at it from right and left, uttering all the time sharp cries of anger and alarm. The Squirrel seemed quite unable to retaliate, and beat a hasty retreat, leaving the bird in undisputed possession of the tree which it had chosen for its abode.—A. W. Price, Tynemouth, February 15th, 1885.

Squirrel's Method of Carrying its Young.—I don't know whether the habit of the Squirrel of carrying its young in its mouth after the manner of the domestic cat is of any interest to you, or generally known. Some years since, when walking through a park in the neighbourhood of Shrewsbury, I observed a Squirrel so carrying its young one, which I captured before it was able to reach a tree. I afterwards withdrew, but upon returning shortly to the spot, I found the old one quartering the ground in search of its lost one.—Geo. W. Oldfield, London, 28th February, 1885.

Naturalist,

STRASBURGER'S NEW INVESTIGATIONS ON THE PROCESS OF FERTILISATION IN PHANEROGAMS.

By THOMAS HICK, B.A., B.Sc.,
President of the Botanical Section of the Yorkshire Naturalists' Union.

(Continued from page 178.)

The details of the fertilising process as given up to this point were determined, as already intimated, for the most part in orchids. But other monocotyledons exhibit similar phenomena, and hence the account given may be taken as applicable to most plants of this class. The difficulties attendant upon the investigation of the process in Dicotyledons prevented a complete demonstration of all the details, and our author, therefore, chiefly confined himself to a demonstration of the existence of the cell-nucleus in the pollen-tube up to the point of its entrance into the micropyle, to finding on the other side the fertilising sperm-nucleus in the oosphere or egg, and to establishing in this sperm-nucleus a structure corresponding with that of the generative cell-nucleus in the pollen-tube. In *Monotropa hypopitys* he found it easy to see the pollen-tube enter the micropyle, and could even follow it some distance within, in favourable material prepared from flowers whose stamens were withering. The egg-apparatus showed the same structure as in orchids, the synergidæ being provided at their apices with small, often distinctly-streaked caps, and the three antipodal cells were easy of observation. In *Torenia asiatica*, as is known, the embryo-sac grows forward free to the micropyle of the ovule and displays the egg-apparatus, but the cell-nuclei in the pollen-tube are small, and difficult to demonstrate. For many demonstrations, nevertheless, *Torenia* is very valuable. Nothing is easier than to establish that here the membrane at the apex of the embryo-sac is broken through by the synergidæ, and that the caps of the synergidæ are built up from the cytoplasma of the same, and consequently are to be ascribed to them. The wall of the embryo-sac over the caps is dissolved during the originating of these caps, and takes no part in their formation. It can be easily and certainly proved also that in *Torenia* the pollen-tube penetrates into the egg-apparatus between the caps of the synergidæ, its contents remaining sharply limited from those of the synergidæ.

In the last section of his work, which constitutes more than one-half of the whole, Strasburger proceeds to consider the nature of generation or reproduction, in the light of the facts and observations brought forward in the preceding sections. In his opinion, these

supply all the evidence that is necessary for the complete establishment of the following propositions:—

1.—The process of fertilisation consists of the copulation of the sperm-nucleus (brought into the egg) with the egg-nucleus.

2.—Cytoplasma does not take part in the process of fertilisation.

3.—The sperm-nucleus and the egg-nucleus are true cell-nuclei.

The third proposition he considers is proved by his own researches. For whilst elsewhere the cell-nucleus appointed for the act of fertilisation, in its transformation into spermatozoids, or the cell-nucleus of the same, undergoes such changes as to raise legitimate doubt as to its true nature; in the plants here dealt with, a cell-nucleus of the pollen-tube comes to the egg in a quite unchanged form, and completes the act of fertilisation. Direct observation makes this a complete certainty. So, the egg-nucleus of phanerogams arises from the division of a mother nucleus, and in Angiosperms retains unchanged, up to the moment of fertilisation, both the structure and the reactions of an ordinary cell-nucleus.

As to whether or not cytoplasma takes part in the fertilising process, some differences of opinion still exist, and hence Strasburger dwells at some length on the second proposition. A view somewhat widely held hitherto, is that not only the sperm-nucleus, but also the attendant protoplasm, takes part in fertilisation. The evidence usually adduced in favour of this view Strasburger examines with care, but is unable to accept it as conclusive. On the contrary, in his judgment, his own researches prove conclusively that the cytoplasma of the *generative* cell in the Gymnosperms, and of the *vegetative* cell of the Angiosperms, serves only as a vehicle in order to bring the sperm-nucleus to its appointed place, where it is taken over by the cytoplasma of the egg. As already stated, therefore, the cytoplasma of the pollen-tube plays the same part as the cilia in the spermatozoids of the vascular cryptogams.

The first proposition seems to have been first distinctly formulated by O. Hertwig, and is definitely established by the researches here published. The sperm-nucleus may, in the first instance, differ in size from the egg-nucleus, but it usually attains the size of the egg-nucleus before copulation begins. In the copulating process the nuclei at first become flattened on their apposed sides, the separating walls disappear, and the nuclear cavities blend into one. The nuclear threads come into contact with, but do not interpenetrate one another, so that there is no blending of the substance of the two threads. An actual blending occurs only between the nuclear sap of the two cell-nuclei, and eventually also between their nucleoli.

Hence it is not the morphologically differentiated elements of the two cell-nuclei, but the undifferentiated ones, that mutually penetrate one another. For the nuclear sap, this must necessarily happen; for the nucleoli, the union may not take place, and consequently it cannot be regarded as an essential part of the process of fertilisation. The result of the act of copulation is the formation of a germ-nucleus which contains the nuclear network of the two copulating nuclei. Very soon this nucleus divides, and the division takes place in such a way that each of the two daughter nuclei contain just as many threads from the father (sperm-nucleus) as from the mother (egg-nucleus). In the daughter nuclei, the segments of the nuclear threads unite by their ends to form a single thread, which is therefore built up partly from the father and partly from the mother. Hence the blending of the nuclear threads of the two copulating nuclei first occurs in the daughter nuclei formed by the division of the germ-nucleus. As regards all succeeding generations of nuclei, Strasburger seems to be of opinion that they contain nearly an equal number of pieces of nuclear thread from the father and from the mother.

In entering upon a critical examination of the process of fertilisation, Strasburger proceeds on the assumption that the essentials remain the same in the whole organic kingdom, and that, consequently, the facts gained in the investigation of phanerogams can be utilised to elucidate the process in other cases. Hence he says we must assume that even in the simplest processes of copulation, whether the bodies concerned are motile or stationary, as in *Pandorina* and *Spirogyra*, the fertilisation depends upon the blending of the cell-nuclei of the conjugating bodies. The fact that in these cases both bring a nearly equal quantity of cytoplasma to the zygote or zygospore he regards as a subordinate matter, and as no indication that cytoplasma is necessary for the act of copulation. This view is further confirmed by reference to *Fucus*, where the egg contains several hundred thousand times as much cytoplasma as the spermatozoid, though both bodies contain equal quantities of nuclear substance. In all cases, it would seem that the cell-nuclei destined for the sexual act, must enter into a physiological condition necessary for the purpose, and our author considers he has shown they can only attain to this in consequence of a certain mode of nutrition. Hence, the medium in which they find themselves—*i.e.* the surrounding cytoplasma—must embrace the conditions requisite for this, and from it they must draw the nutriment which equips them for the performance of their special functions.

(*To be continued.*)

NOTE—COLEOPTERA.

Astynomus ædilis at Wakefield.—The circumstance mentioned by Mr. N. F. Dobrée, of this species having been found in Hull, is by no means a rare one. I have in my collection no fewer than six Yorkshire (?) examples of this insect, male and female, one of which was found in a colliery in this neighbourhood—conveyed there, no doubt, amongst the pit timber, which I learnt was from Scotland. Another was picked up on the footpath near Stanley. All were doubtless brought here in Scotch or foreign wood. It cannot be considered indigenous to England, and has certainly no claim to be entered as a Yorkshire species; in fact the only known locality where it is to be found in quantities at all corresponding to a breeding haunt in the British Isles, is Rannock, in Perthshire. A few years ago great numbers of them were found in Hartlepool, having come to this country in a cargo of pit-props from France. These observations tend to show how easy it is to record an insect as indigenous owing to accidental causes.—E. B. Wrigglesworth, Wakefield, December 17th, 1884.

NOTES—LEPIDOPTERA.

Erastria fuscula: a species new to Yorkshire.—The announcement of the capture of *Erastria fuscula* in Yorkshire will probably be received with surprise by many, as it has hitherto, I believe, been regarded as a southern species; inasmuch, however, as its food-plant is abundant, and no other individual impediment appears to exist, there is apparently no strong reason why this species should not breed in our county: a reflection which is strengthened by the recollection of the number of species formerly regarded as southerners which have been taken in Yorkshire, and other northern counties, during the past thirty years. Mr. Henry Willits of Sheffield, a practical entomologist of fifty years' experience, in a list of flies taken by himself at Wharncliffe, reports the capture of two specimens of *E. fuscula* at that place. 'near the top of the private walk'; he has unfortunately made the all too common mistake of not keeping a note book, and is therefore unable to say definitely, the exact date of the occurrence, but places it for either 1871 or 1872. Mr. Willits being by nature of a very retiring disposition, is probably known to but few naturalists; he has, however a safe knowledge of species, and is eminently trustworthy; I have, therefore, no hesitation in accepting the report on his authority.—Wm. E. Brady, 1, Queen Street, Barnsley, Feb. 23rd.

The Lepidopterous Fauna of Lancashire and Cheshire.—*Leucophasia sinapis.* At page 165, Mr. Ellis records this species as being abundant at Grange. I did not see any specimens of it in the woods near Grange when I was staying there in 1883, and Mr. Anthony Mason (of Grange) informed me that the species, though formerly abundant in the woods in question, had of late years entirely disappeared. My old correspondent, the late James Murton, of Silverdale, used to send me specimens of this insect which he stated he had collected at Silverdale and Arnside.

Cœnonympha typhon (*davus*). In addition to the localities given by Mr. Ellis, at page 171 *ante*, I may mention Meathop Moss, near Grange, where I found this species in profusion, in June 1883. This species is also abundant on Witherslack Moss, about two miles to the north of the last-mentioned locality. [These localities are in Westmoreland County, and are therefore not additions to Mr. Ellis's list. Considerable caution is requisite in this respect, and it is very probable that many insects recorded as from 'Grange' are really from Witherslack, which is on the Westmoreland side of the county boundary.—Eds.]

Polyommatus corydon. This species certainly occurred one year in abundance in the neighbourhood of Silverdale. In the autumn of 1870 I received a number of specimens of it from Mr. James Murton; and I was informed in June 1883, by Mr. Anthony Mason, that this species, although previously unknown in the district, had suddenly appeared in abundance at Silverdale, in 1869 or 1870, and had since as suddenly disappeared.

Zephyrus (*Thecla*) *betulæ.* I am surprised to find that only a single specimen of this species is recorded (*ante*, p. 172) from Silverdale in 1868. Some fifteen years ago I received more than a dozen specimens of this insect from Mr. Murton, who informed me that the species was not uncommon in the neighbourhood of Silverdale.—H. Goss, Surbiton Hill, Surrey, 12th March, 1885.

MICRO-PALÆONTOLOGY OF THE NORTHERN CARBONIFEROUS SHALES.

By GEORGE R. VINE,

Attercliffe, Sheffield; *Secretary of the British Association Committee on Fossil Polyzoa.*

IV.—POLYZOA, ENTOMOSTRACA, GASTEROPODA, AND MISCELLANEOUS ORGANISMS OF THE SKELLY GATE SHALES, NORTHUMBERLAND.

It may perhaps be as well to state that personally I know but little of the various divisions of the Limestone, or Shale beds of Northumberland. My studies have been confined more particularly to the micro-palæontology, rather than the geology of the districts that I mention in the head lines of my various papers. It may appear, therefore, an exhibition of ignorance on my part in thus separating the Redesdale from the Skelly Gate deposits. But I do so purposely, because I find that the organic forms in my two lots of shale, supplied to me by the Rev. W. Howchin, are characteristically distinct. With reference to the distinction that I made in my first paper (Naturalist, Sept., p. 38), Professor G. A. Lebour writes: 'The Skelly Gate and Redesdale localities are really the same, the former being a part of the latter, and the bed of ironstone shale in which the overlying limestone, in which the Foraminifera were found, being the same in both.' I cannot dispute the above, yet at the same time the organisms in the two sets of material have been differently preserved. The Skelly Gate material is a portion of a true muddy shale, and the organisms in it appear to have been destroyed by an inrush of mud in some estuarine locality; or it may be mud and limestone debris have mingled together, and in this way become re-deposited. The perfection and peculiarity of the Entomostraca, however, seems to point in the direction that we are dealing with a local estuarine deposit. Perhaps Professor Lebour, or some other local student living in the neighbourhood of these Shales, may be able to settle the points now raised.

I cannot make much of the Foraminifera of the Skelly Gate material. I have certainly given a rather full list of species in my introductory paper (Naturalist, Sept., p. 39), but this is chiefly from the monograph of Mr. H. B. Brady, and after the most careful examination I cannot find more species than those marked ** in the list, together with additions to the locality marked *v. *Trochammina incerta* and *T. centrifuga* are very abundant, and some of the forms seem to be enveloped by a thin crust of iron pyrites. In the finest siftings of this Shale many of the more minute specimens of these species may be found, but they are best seen

April 1885.

when the dust is mounted—properly prepared—in canada balsam. The Entomostraca I have spoken of previously as peculiar, and as some of my slides were submitted for examination to Mr. J. W. Kirkby, he desired me to allow Professor T. Rupert Jones to examine them also, as some of the forms were either new or very little known, consequently the names are provisional only in the present list of Skelly Gate forms. The Polyzoa of the Shales are very poor and scanty, and the species few in number.

Class POLYZOA.

Sub-order CYCLOSTOMATA Busk.

Fam. *FENESTELLIDÆ*.

Genus FENESTELLA Miller and Lonsd.

(See Naturalist, Oct. 1884, p. 62.)

1 **Fenestella plebeia** M'Coy.

Mostly in fragments; but some of the specimens have the well-marked characteristics of the species, and have both the non, as well as the tuberculated keel common in specimens from the Hairmyres district of Scotland.

Fam. *DIPLOPORIDÆ* (Naturalist, Oct., p. 63).

Genus DIPLOPORA Young and Young.

2 **Diplopora marginalis** Young and Young.

Fragments belonging to this species are rather more abundant in these Shales than any other of the forms described in my October paper. In the mode of branching, &c., the Skelly Gate fragments do not differ in any material sense from those of the upper Limestone Shales of Scotland, but the characteristic features of the cell mouth varies slightly in different parts of the zoarium. In some of the more delicate stems (or branches), the orifice of the cell is small, and in these the septum, separating the more minute pore below, is very distinct. In the larger, or more robust fragments, the orifice of the cell is also large, and the margin (peristome) slightly serrated, and beneath these it is difficult at times to make out whether the smaller opening, together with its intervening septum, is present or not. The other characters of the species, such as a 'mesial ridge bearing a tubercle between each pair of cells, together with a narrow ridge running parallel to this on either side of the mesial ridge,' are also distinct (see Naturalist, loc. cit. p. 64, No. 6). This type, however, of branch and cell is found more frequently in the upper, rather than in the lower Carboniferous Shales of Scotland.

With regard to the existence of this secondary, or 'sub-oral' pore in some of the Palæozoic species of Polyzoa, Mr. A. W. Waters

writes (Quart. Jour. Geol. Soc., Nov. 1884, p. 675): 'Among the Palæozoic fossils there is in one or two a structure which may represent the suboral pore or avicularium,' and as long as we do not know the signification of the 'adventitious tubules' of *Diastopora obelia*, &c., we may be justified in asking if they may not possibly have had an homologous origin. The same, or at least a similar thought occurred to the Messrs. Young of Glasgow, the original describers of this species (*D. marginalis*), and also in their description of *Acanthopora stellipora*, for they say (Quart. Jour. Geol. Soc., Dec. 1874, p. 682-3): 'Two interpretations of these openings are possible. . . . . The smaller plainly cannot be regarded as that of the ovicell; the only other structure to which it can be compared is an avicularian appendage, and if this be correct, some at least of the Palæozoic Polyzoa would belong to the order *Cheilostomata*.' It will be well to bear these suggestions in mind, and any light that can be thrown upon the subject must be of value to the special worker.

Sub-order CRYPTOSTOMATA Vine.

Fam. *RHABDOMESONTIDÆ* Vine (Naturalist, Oct., p. 65-6).

Genus RHABDOMESON Young and Young.

4 **Rhabdomeson gracile** (Phill. sp.).

5 **Rhabdomeson rhombiferum** (Phill. sp.).

Both of these species are present in the Skelly Gate Shales, but are very much crushed.

Fam. *MONTICULIPORIDÆ* Nicholson.

Genus ARCHÆOPORA D'Koninck.

6 **Archæopora nexilis** Vine (D'Koninck's sp.).

There is one small fragment of a colony of this species, adherent to one of the broken spines of *Productus spinulosus* Sow., which are very abundant in the Skelly Gate Shales.

ENTOMOSTRACA.

Since this paper was written, Mr. J. W. Kirkby has provided me with the following list of species which he wishes me to print as provisional only, and I do this with greater pleasure because I wish to draw attention to the Entomostraca of Skelly Gate. I am unable to add to the following list of species, because the original sample sent to me by Mr. Howchin from this locality is exhausted: all the organisms have been picked out by me, and the full results are given in this paper.

7 **Cytherella** sp. not yet determined.

8 **Cytherella valida** Jones and Kirkby.

April 1885.

9 **Cytherella valida ?** or variety.
10 **Cytherella valida,** with traces of pitting.

11 **Darwinella, ? Berniciana** Jones.

12 **Cythere,** sp. nov.

13 **Leperditia, ? Okeni,** var. **attenuata.**

LEPERDITIÆDÆ.

14 **Beyrichia tuberculospinosa** Jones and Kirkby.
15 **Kirkbya Urii** Jones and Kirkby.

Both of these species have been identified for me by Mr. Kirkby, and I have only three specimens—two of No. 14, and one of No. 15. Both are very delicate forms, and the *Beyrichia* species is the only specimen of this genus that I have found in these lower Shales. In my December paper (Naturalist, p. 98), it will be noticed that I give from the Mountain Limestone horizon another *Beyrichia*, *B. crinita* J. and K. In the Scotch Shales, Beyrichiæ are tolerably common, and in the Silurian Rocks very common. *Kirkbya Urii* J. and K. is also common in the Scotch Shales of Robroyston, Brockley, and High Blantyre.

ECHINODERMATA.

Fam. *HOLOTHUROIDEA.?*

16 Perforated plate of some—to me—unknown species, I am unable to locate the form indicated by the figure 16, but I consider it of sufficient importance to be placed in this list. The plate is very small and it has a central circular perforation, surrounded by six other circular perforations. With my Entomostraca slides I submitted this, and two other obscure forms, to the judgment of Mr. J. W. Kirkby, and he returned it to me marked ? *Holothurian.*

With regard to this order of the Echinodermata, Professor H. A. Nicholson (Manual of Palæontology, p. 305, vol. I. ed. 1879) says: 'As might have been expected from the generally soft nature of their integuments, the Holothuroids are hardly known as fossils. . . . . The only remains referred with any probability to this order are certain calcareous spicula which have been found in deposits as old as the Carboniferous, and also in strata of both mesozoic and tertiary age, and which have been regarded as belonging to forms related to Synapta. . . . . .' Mr. Robert Etheridge, jun., found in washings of the Limestone Shales (see Desc. of Sheet 23, Scot. Geol.

Survey) from one or two localities small, microscopic, perforated wheel-like organisms, which he provisionally referred to the Holothuroidæ, but very little is known otherwise than that given above of these minute remains.

GASTEROPODA.

I have four specimens of Gasteropoda from these Shales. They are very rare, and what I have belong to two Genera, *Loxonema* Phillips, and *Macrocheilus* (?) Phillips. They are not in a good state of preservation, but in thus drawing attention to their presence in these lower Shales better specimens might in time be found. In the Scotch Shales Mr. John Young says: 'The Gasteropoda are more abundant in those which alternate with the limestone than in the limestone itself.' Some species are very common, others are rare. And again (Trans. Edin. Geol. Soc., 1881-2, p. 85-6), 'The Scottish Carboniferous univalve mollusca are as a rule considerably smaller in size than species of the same genera found in the limestone strata of England, Ireland, and other countries where similar strata prevail. This shows that some dwarfing influence was at work; and it has likewise been noticed amongst the other groups of the mollusca. The causes which led to this dwarfing may be difficult to explain, but probably it was due to less favourable conditions of the sea bottom on which they lived, brought about by temperature, depth of water, its freshness or saltness, or by the nature of the sediments that were being deposited.' The same rule would apply to other groups of fossils as well as to the mollusca; and every indication of the probable causes of the multiplication of, or degeneracy of species, will help to clear up some few of the mysteries which surround the life histories of peculiar fossils. With regard to our positive knowledge of the actual distributions of species, it may be noted 'that on certain horizons of strata in both the lower and upper limestone series there is an associated group of shells which always appear in certain of the Limestone Shales and clay ironstones, and sometimes in the calmy and cement limestones.' Among the bivalves *Arca* and *Cypricardia*, among the univalves several genera of Gasteropoda such as *Pleurotomaria*, *Macrocheilus*, *Loxonema*, &c. 'In the strata in which the foregoing groups occur, remains of Corals, Crinoids, Polyzoa, and the greater number of species of the Brachiopod shells are absent, or at least very rare; while on the other hand, in the strata where this latter group is abundant, the foregoing group of mollusca are rarely met with' (see Cat. of Western Scottish Fossils). It is no difficult matter, then, to know the difference by the association of

the fossils, of a true Shale and of a natural deposit in some unknown depth of a Carboniferous ocean. With regard to real shore deposits, I suppose similar causes affected the preservation of fossils in the past ages of the world's history, as affect the preservative conditions of forms belonging to living species. On the coasts of South Africa, and also of Bermuda, there are shell sands in fine condition consisting of minute shells, Entomostraca and Polyzoan forms mingled with calcareous weeds, and debris of Corals. It is easy to pick out from this shell sand forms of Polyzoa in a beautiful state of preservation, but a survey of only a small portion of the sand is sufficient to satisfy the student under what conditions the mass was formed. Even the best preserved are water-worn or slightly eroded. Material brought from even a moderate depth of the ocean, from twenty to forty fathoms, fragments are sharp in outline and tolerably well preserved. Applying the same rule to the past life of the earth—ocean fossils and shore debris tell their own tale, whether from the Carboniferous, Devonian, or Silurian Limestones or Shales. If therefore the student of Palæontology would, in his investigations, rigidly apply this rule in all his labours, many interesting details respecting the preservation and distribution of species and groups would be brought to light, and additional interest would surround the study of the dead species and dead groups of the inevitable past of our globe's historical life, as surrounds the study of species belonging to living nature.

(To be continued.)

A BURIED VALLEY.

The steady progress of the Mersey Tunnel has been watched with keen interest, and its approaching completion is a matter for general satisfaction. Geologists especially have been waiting for the evidence which the tunnel works would most probably afford on the question of the pre-glacial river valley, which Mr. T. Mellard Reade, F.G.S., so long ago as 1872, predicted would be found to exist below the level of the present valley of the Mersey. Mr. Reade's deductions were based upon certain borings at Widnes and in the upper reaches of the Mersey, revealing an unexpected gorge, deep below the drift on which the town of Widnes stands, and connecting the rocky bed above Runcorn Gap with that below it by a steep gradient. The course of the pre-glacial river was presumed to be in the main identical with that of the existing river valley. The discovery of this ancient valley is now announced in a brief paragraph in *Nature*, of December 11th, 1884, and the *Builder* of December 13th also contains a letter on the subject by Mr. Reade himself. It appears that, at about three hundred yards from the Liverpool side, the upper part of the tunnel intersected for about 100 yards a gorge filled with boulder clay and erratics. The clay is hard, and of the usual type of lower boulder clay elsewhere found resting on the Triassic sandstone. Well-rounded boulders of granite, greenstone, and other travelled rocks were taken out of the clay. The rock through which the tunnel is cut belongs to the 'Pebble Beds' division of the Bunter Sandstone, and was found to be remarkably free from faults.

The pre-glacial valley of the Mersey is now, therefore, an admitted fact, and its discovery affords a very complete proof of the truth of Mr. Reade's theory, submitted over twelve years ago, in the face of a considerable amount of opposition.—O. W. Jeffs, Liverpool.

Naturalist,

GEOLOGICAL NOTE.

Drift-Coal in Durham.—[The following note, which we have received through Prof. Lebour, and which bears upon the subject of his note in our last number, is of distinct local value, and will be useful to our Durham readers.] In 1864-68 I was one of the contractors (Monkhill and Prodham) engaged in making the railway from Scotswood to Benfieldside. About 3½ miles up from Scotswood, nearly opposite Gibside, was the the biggest cutting on the line—some sixty feet deep or so in the deepest part. About two-thirds of the depth was dry sand resting on the hardest of boulder clay. In the sandy portion were what you describe as 'discontinuous, wedge-shaped, current-bedded patches of coal,' as well as numerous fragments of coal all through the sand. This coal was picked out by the navvies to make fires during the dinner hour, and for use in the huts near by, and was of a remarkably fine quality, as I have often heard them say, and superior to any they got from the pits and from coal seams in cuttings further up the line near Ebchester. It burnt like cannel coal, with a bright flame. What I remember of the size of the pieces is that plenty of them were as big as one's two fists, or nearly so, and about as angular or rounded. They were bright-coloured, more like jet than the hard slate-coloured cannel coal of Scotland. The coal was found in greatest abundance at the Scotswood end of the cutting, and where the sand was cleanest. At the west end of the cutting the sand was of a loamy nature, and did not contain much—or any—coal.—HERBERT PRODHAM, Allerston, near Pickering, March 11th, 1885.

THE YORKSHIRE NATURALISTS' UNION: ANNUAL MEETING AT DONCASTER.

The twenty-third annual meeting of the Yorkshire Naturalists' Union, which was held at Doncaster on Tuesday the 3rd of March, was a remarkably successful and interesting one, thanks to the admirable reception which had been organised by the Doncaster Microscopical Society. There was a large attendance of members from all parts of the county, more than twenty Societies being represented. The proceedings commenced in the afternoon, when the General Committee met to transact the business of the annual meeting. After the admission into the Union of the Scholes Botanical and Naturalists' Society, and of a long list of new members, Messrs. A. H. Allen, F.C.S., of Sheffield, Thomas Bunker of Goole, W. E. Brady of Barnsley, F. W. Dickinson of Rotherham, J. M. Kirk of Doncaster, Washington Teasdale, F.R.M.S., of Leeds, and J. A. Erskine Stuart, L.R.C.P., of Batley, were added to the list of permanent members of the General Committee. The Annual Report, which was then read and afterwards adopted, pointed out that the year had been a very successful one, and reviewed its chief features. The usual five excursions had been well chosen, as the large attendance of members at each had proved. The Societies which constitute the Union had remained at thirty-nine in number. Two Societies—those at Mirfield and Shipley—had ceased to exist, while two others—the Kingston Field Club, of Hull, and the Hull Great Thornton Street Wesleyan Field Naturalists' Society—had joined the Union. The statistics furnished showed that the Union now included 349 members and 2,422 associates, making a total of 2,771, twenty-three more than in the previous year. It was pointed out that the number of subscribing members (349) was as yet inadequate, and a hope was expressed that the associates would see the necessity of considerably augmenting the number of the members. Reference was then made to the publication of two instalments of the 'Transactions' during the year; and after an allusion to the *Naturalist*, the Executive expressed their sense of the honour which Lord Walsingham had done the Union by accepting the presidency, his tenure of which had materially enhanced the prestige and dignity of an office which has been occupied by some of the most distinguished of scientific Yorkshiremen. The excursion programme for 1885 was then decided upon as follows:—Kiveton Park, 30th April; Boroughbridge, Whit-Monday; Market-Weighton or Pocklington for the Wolds, June; Whitby, August Bank-holiday; and Blubberhouses, by invitation of Lord Walsingham, early in September. For the annual meeting of March 1886, invita-

tions were presented by deputations from Beverley, Malton, and Dewsbury, the first-named of which was eventually accepted. Proceeding to the election of officers, it was announced that the Presidency had been accepted by the Rev. W. H. Dallinger, LL.D., F.R.S., Pres.R.Micr.S., of Wesley College, Sheffield. The two Secretaries, Messrs. W. Denison Roebuck, F.L.S., and W. Eagle Clarke, F.L.S., of Leeds, were re-elected; and the Executive Council, composed of Rev. W. Fowler, M.A., Liversedge, Rev. W. C. Hey, M.A., York, Messrs. J. W. Davis, F.S.A., Halifax, John Emmet, F.L.S., Boston Spa, C. P. Hobkirk, F.L.S., Dewsbury, G. T. Porritt, F.L.S., Huddersfield, J. J. Stead, Heckmondwike, B. Holgate, F.G.S., Leeds, H. T. Soppitt, Bradford, and E. B. Wrigglesworth, Wakefield, was also elected. Messrs. S. A. Adamson, F.G.S., and J. E. Bedford, of Leeds, were chosen as auditors. After votes of thanks to the retiring officers, the meeting was adjourned until evening.

Meanwhile the various sections met and elected their officers, the results being as follows:—Vertebrate Section, Mr. John Cordeaux, M.B.O.U., Great Cotes, president; Mr. James Backhouse, jun., York, secretary. Conchological Section, Rev. W. C. Hey, M.A., York, president; Messrs. J. Darker Butterell, Beverley, and John Emmet, F.L.S., Boston Spa, secretaries. Entomological Section, Mr. G. T. Porritt, F.L.S., Huddersfield, president; Mr. E. B. Wrigglesworth, Wakefield, secretary. Botanical Section, Mr. Thomas Hick, B.A., B.Sc., Harrogate, president; Messrs. P. F. Lee. Dewsbury, and Geo. Massee, F.R.Micr.S., Scarborough, secretaries. Geological Section, Rev. E. Maule Cole, M.A., Wetwang, president; Messrs. S. A. Adamson, F.G.S., Leeds, and J. E. Wilson, Bradford, secretaries.

The annual public meeting was held in the Mansion-house in the evening, Lord Walsingham occupying the chair. The annual report having been again read, and the excursion programme announced for the benefit of the members generally, the Rev. Canon Brock, M.A., as president of the Doncaster Microscopical Society, assumed the chair, and Lord Walsingham delivered the annual presidential address, which forms the principal and central feature of the annual gatherings of the Yorkshire Naturalists' Union. The subject of the address was 'Some probable causes of a tendency to Melanic Variation in Lepidoptera of high latitudes.' We have not space to give an account of the line of argument, but this is the less necessary as the address itself is already printed as part of the Transactions of the Union. A vote of thanks to his Lordship was then adopted on the motion of Dr. H. C. Sorby, F.R.S., seconded by the Rev. Canon Wright. His Lordship having replied, resumed the chair, whereupon Mr. Cordeaux proposed a cordial vote of thanks to the Mayor of Doncaster for his kindness in granting the use of the noble rooms he had placed at the Union's disposal, and to the Doncaster Society and its members for their hospitable and kind reception. This was seconded by Rev. W. C. Hey and carried unanimously, as was also a similar vote to Canon Brock. The remaining portion of the evening was occupied by a brilliant and most successful microscopical conversazione, organised by the Doncaster Society.

NOTES AND NEWS.

The foundation stone of the new museum at Chester, in establishing which the Chester Society of Natural Science and the Chester Archæological Society have united their efforts, was laid on the 5th February, by the Duke of Westminster. The building is to cost over £8,000, most of which has already been subscribed. Not merely is it to be a museum, but includes provision for educational work, in the form of laboratories and class-rooms, both for science and art.

Dr. Francis Day is to be heartily congratulated on the completion of his excellent standard work on British and Irish Fishes. A monograph on this class of our fauna, brought up to date, was much needed, and it is fortunate that an ichthyologist of Dr. Day's attainments was forthcoming to undertake the task. The book leaves nothing to be desired unless, indeed, the valuable adjunct of *coloured* plates, though even in this respect the plates are the best we have seen on the subject. We commend, too, the author's systematic arrangement of his subject matter to all undertaking work of a similar character; the saving of time secured by such an admirable arrangement cannot be over-estimated.

The American Ornithologists' Union last year paid Mr. Henry Seebohm the honour of electing him an Honorary Member of their body.

In the first number for 1885 of the Revue Bryologique the Abbé V. Berthoumien gives an important analytical key by which the French pleurocarp mosses may be identified when in the barren state.

At the anniversary meeting of the Royal Microscopical Society, held on the 11th of February, the Rev. W. H. Dallinger, LL.D., F.R.S., of Sheffield, was re-elected president. At the same meeting he delivered the annual address, in which he dealt with the life history of an hitherto unrecorded septic organism.

Members who in old time were in the habit of frequenting the rambles of the West Riding Consolidated Naturalists' Society will learn with regret that Mr. John Sanderson, who has for a number of years been president of the Holmfirth Botanical Society, died suddenly on the last day of the old year, while attending a funeral.

We are pleased to learn that the two naturalists' societies which have existed in York for the last few years have taken the wise step of amalgamation, and we wish the combined Society every prosperity. The name which the Society now bears is 'The York and District Field Naturalists' Society,' and Dr. Spencer has been chosen president.

We have received from Mr. S. L. Mosley, of Huddersfield, the first number of a little magazine—'The Natural History Teacher, and Journal of the Board Schools' Natural History Society'—which he has set on foot for the furtherance of his work as lecturer on natural history to the Board Schools of Huddersfield; and we wish him every success in his labours.

The Lancashire and Cheshire Entomological Society held their annual meeting at Liverpool on the 26th of January. The officers elected were Mr. S. J. Capper, president, Mr. Nicholas Cooke, vice-president, and Mr. John W. Ellis, secretary. The report showed that the number of members was fifty-nine. The president's address dealt with various topics of interest to entomologists, and reviewed the past year from the entomological standpoint.

The Ripon Naturalists' Club and Scientific Association held their annual meeting on the 10th February. The report showed the membership as standing at 203, and detailed the additions to the excellent little museum which the Society has got together, and upon which it is to be heartily congratulated. The officers were for the most part re-elected, the Marquis of Ripon being again chosen president, and Mr. B. Smith continuing to discharge the duties of the secretaryship.

The Manchester Field Naturalists' and Archæologists' Society, the oldest of the Manchester field-clubs, held its twenty-fifth annual meeting on the 27th January. The report stated that during the quarter-century of the Club's existence, it has enrolled no fewer than 1,500 members, held over 250 excursions, and organised between fifty and sixty soirées. The present membership was stated as being 184. Mr. L. H. Grindon—the founder—was unanimously re-elected president and botanical referee, Mr. William Carr as treasurer, and Mr. Alfred Griffiths as secretary.

Evidence of the assiduous and well-directed assiduity of the members and friends of the Bradford Naturalists' Society is before us in the form of their 'Diary of Natural History Observations' for 1884, which has been reprinted from the 'Bradford Weekly Telegraph,' in which it has appeared week by week with great regularity, the series of notes extending from the 5th January to the 26th December. They deal with both botanical and zoological phenomena, and are evidently to be relied upon, including, as they do, the local observations of various well-known and able naturalists.

METEOROLOGICAL RETURNS FOR JANUARY 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

	Name of Station; its height above sea-level; and Name of Observer.	Atmospheric pressure.	TEMPERATURE (IN SHADE).					RAINFALL.			
				Extremes.						Greatest Fall in a Single Day.	
		Mean Height of Barometer (reduced to zero and to sea-level).	Mean Temperature for Month.	Highest Maximum registered.		Lowest Minimum registered.		Total Rain Collected.	Number of Days on which there fell 0·01 inch or more.		
				Amount.	Date.	Amount.	Date.			Amount.	Date.
	ISLE OF MAN:	° ′	° ′	° ′		° ′		inch		inch	
	CRONKBOURNE (140 ft.).... A. W. Moore, F.M.S.....	29·80	40·05	49·60	10th	31·90	14th, 22nd	3·73	16	0·73	25th
W. COAST:	SILLOTH, CUMB. (28 ft.) .. Rev. F. Redford, M.A...	29·79	37·5	51·0	29th	21·8	23rd	1·95	14	0·41	28th
W. COAST:	BARROW-IN-FURNESS (—).. W. S. Whitworth	29·81	38·00	48·00	29th	28·00	22nd, 23rd	1·76	14	0·41	9th
W. COAST:	LIVERPOOL (BIDSTON) (—) J. Hartnup, jun.	29·83	38·00	54·00	29th	27·00	22nd	1·46	14	0·41	8th
CENTRAL HILL REG.:	NEWTON-REIGNY (Penrith) (577ft.)T.G.Benn, F.M.S.	29·83	35·7	50·2	29th	22·5	23rd	2·67	19	0·70	31st
CENTRAL HILL REG.:	MASHAM, YORKS. (269 ft.) T. Carter	—	—	—	—	—	—	2·25	22	0·49	28th
CENTRAL HILL REG.:	HAWES JUNCTION (1,135 ft.) Station-master	28·57	33·20	49·00	29th	21·00	23rd	5·16	19	1·61	28th
CENTRAL HILL REG.:	ARNCLIFFE, WHARFEDALE (750ft.)Rev.W.Boyd,D.D.	—	38·1	49	28th	25	21st	5·11	20	1·29	28th
CENTRAL HILL REG.:	STONYHURST (381 ft.)..... Rev. S. J. Perry, F.R.S.	29·84	41·3	52·3	29th	22·5	20th	3·51	13	1·13	28th
CENTRAL HILL REG.:	DALTON, HUDDERSFIELD.. J. W. Robson	—	—	—	—	—	—	1·81	16	0·66	10th
EASTERN LOWLAND REGION:	NORTH SHIELDS (—) . .. J. W. Irvine	29·84	37·90	53·00	29th	27·00	23rd	1·56	13	0·42	11th
EASTERN LOWLAND REGION:	SCARBOROUGH (120 ft.) .... Allan Rowntree, F.M.S.	29·86	37·9	53·3	29th	30·4	23rd	1·97	—	0·35	12th
EASTERN LOWLAND REGION:	BALDERSBY, THIRSK (100 ft.) W. Gregson	—	—	—	—	23·00	12th	1·98	14	0·36	30th
EASTERN LOWLAND REGION:	YORK MUSEUM (—) ..... The Curator	29·87	36·60	54·00	29th	24·00	15th	1·56	18	0·25	11th, 28th, 30th
EASTERN LOWLAND REGION:	MOORTOWN, LEEDS (500 ft.) G. Paul, F.G.S., F.M.S.	29·83	35·87	51·60	29th	24·20	22nd	1·56	17	0·30	30th
EASTERN LOWLAND REGION:	BARNSLEY (350 ft.) ..... M. T. Sadler, M.D.	—	—	54·0	29th	24·0	22nd	1·29	17	0·33	28th
EASTERN LOWLAND REGION:	HULL, DERRINGHAM (10 ft.) Wm. Lawton.....	30·04	36·9	53·0	29th	22·0	22nd	1·71	19	0·20	30th
EASTERN LOWLAND REGION:	SPURN POINT (—) ..... J. B. Smith	29·85	37·50	49·00	28th, 29th	26·00	13th	1·36	16	0·21	12th
EASTERN LOWLAND REGION:	LOUTH, LINCS. (111 ft.).... T. W. Wallis.....	29·88	35·1	53·0	29th	23·0	22nd	2·51	17	0·80	12th
EASTERN LOWLAND REGION:	BOSTON, LINCS. (24 ft.).... W.H.Wheeler,M.In.C.E.	29·86	35·70	54·0	29th	26·0	22nd	1·86	16	0·40	10th
EASTERN LOWLAND REGION:	LOUGHBOROUGH (—) ..... W. Berridge, F.M.S.....	29·88	36·10	54·00	29th	21·00	22nd, 22rd	1·61	18	0·38	10th

Wind mostly E. (Silloth, Newton Reigny, and Stonyhurst), S.W. (Silloth) and S.E. (Newton Reigny and Moortown.

Gales noted 7th and 8th, 10th and 11th, 28th, and 31st.

Snow fell on the 12th, 13th, and 14th, in slight amount.

Bright Sunshine.—10·6 h. on 8 days was measured at Derringham, near Hull, and 10·7 h. at Stonyhurst; 19 h. 54 m. at Newton Reigny, and 28 h. 2 m. at Silloth.

The 19th and 20th were very dark and gloomy, gas required all day (Derringham).

Highest Temperature in Sun, 85·5° on 16th at Silloth, 77·8 on 30th at Newton Reigny, and 71·8° on 27th at Stonyhurst.

Magnetic Phenomena.—At Silloth a long narrow belt of light was observed at 21 h. on the 22nd, rising near the horizon in E.N.E., and extending beyond the zenith: no other appearance of aurora at the time.

Lightning on the 31st (Stonyhurst).

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Contents:

PAGE

The Reproduction of the Eel—*Thomas Southwell, F.Z.S., &c.* .. .. ..217 to 222

Bibliography of 1884 (PART II., BIRDS, continued) .. ..223 to 227

The Oolites of the Cave District—*Alfred Harker, B.A., F.G.S.* .. .. ..229 to 232

Coleoptera of the Liverpool District—(PART V., CLAVICORNIA) 237
John W. Ellis, L.R.C.P., &c.

Mammalian Notes:— 228
Sperm Whale stranded at Grimsby in 1563—*J. Hopkin* and *Thos. Southwell, F.Z.S.*; Badgers and Red Deer in Upper Wensleydale—*F. Arnold Lees;* Badgers in Nidderdale —*Wm. Storey;* Badgers at North Stainley, near Ripon—*Rev. R. A. Summerfield;* Black Rat at West Hartlepool—*R. Morton Middleton, jun., F.L.S., F.Z.S., &c.*

Conchological Note:— 227
Mollusca at Anston Stones—*Edgar Pickard.*

Cryptogamic Notes:— 232
Surirella elegans, etc., in West Yorkshire—*Edm. Grove, F.R.M.S.;* Habitats of Fresh-water Algæ—*Wm. West.*

Book Notices:— .. ..233 to 235
Ornithology—*Prof. Alfred Newton, F.R.S.;* Flora of the English Lake District—*J. Gilbert Baker, F.R.S.*

Notes and News 235

Meteorological Returns for February 1885—(Edited by *Geo. Paul, F.G.S., F.R.Met.S.*).. 236

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Advertisements.—Scale of charges may be had on application.

BOOKS RECEIVED.

Proc. of Academy of Nat. Sci. of Philadelphia—Part iii., Nov.-Dec. 1884.[Academy.
Trans. of Cumberland and Westmoreland Association.—No. ix., 1883-4. [Asso.
The Auk, a journal of Ornithology—Jan. & April 1885. [American Ornith. Union.
Revue Bryologique, 1885, No. 2. [T. Husnot, Editor.
Lancashire and Cheshire Entom. Soc., Eighth Ann. Report (for 1884). [Society.
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Transactions of Yorkshire Naturalists' Union –Part 8, for 1883. [The Union.
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Nat. Hist. Journal & School Reporter, March 15th & April 15th, 1885. [Editor.
Science Gossip (edited by J. E. Taylor) for April 1885. [The Editor.
Scottish Naturalist, edited by Prof. Trail: April 1885. [Editor.
Journal of Microscopy and Natural Science (ed. A. Allen) April 1885. [Editor.
Midland Naturalist, April 1885. [Midland Union.
Naturalist's World for April 1885. [Editor.
Illustrated Science Monthly for April 1885. [Publishers.
Psyche, a journal of Entomology, Oct.-Dec. 1884. [Editor.
Young Naturalist (edited by J. E. Robson), April 1885. [Editor.

EXCHANGES.

Notices of Exchange inserted free of charge to Subscribers.

Nine diagrams of the various members of the Salmonidae, copied from Day's 'British Fishes' by Mr. Murray, artist, Edinburgh—cost 6s. 6d. each. Offers. Will take books on 'Fish' or 'Angling,' or cash.—J. A. Erskine Stuart, Westfield House, Batley.

Dreissena.—For specimens of *Dreissena polymorpha* Pall., send box and stamped addressed envelope to J. M. Campbell, Kelvingrove Park, Glasgow.

Book Wanted.—Mudd's 'British Lichens' wanted.—Frederic Bower, 9, Pinder Grove, Dorset Street, Manchester.

The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, etc., is **John Eggleston, Park Place, Sunderland.** Lists free.

THE REPRODUCTION OF THE EEL.

By THOMAS SOUTHWELL, F.Z.S.,

Norwich; *Member of the British Ornithologists' Union*; *Author of* '*The Seals and Whales of the British Seas*.'

UNDER the above title a translation of a most instructive paper by Dr. Jacoby ('Die Aalfrage.' By Dr. L. Jacoby. Translated by Herman Jacobson from 'Der Fischfang in der Lagune von Comacchio nebst einer Darstellung der Aalfrage') on the reproduction of the eel, appears in the Seventh Report of the 'United States Commission on Fish and Fisheries.' As these reports, although most liberally distributed by the United States Government, may not be accessible to a large number of the readers of this journal, a summary of Dr. Jacoby's important contribution to that vexed question, the life history of the eel, may be acceptable.

Perhaps no single point in the whole wide field of natural science has given rise to more discussion or has more exercised the minds of the leading naturalists for many centuries past, than the reproduction of the eel. Aristotle, whose original observations, made four centuries before Christ, formed the mine from which for many generations all subsequent natural history not purely imaginary was quarried, must have approached very near to the great discovery of the sexual organ of the female fresh-water eel, for by actual experiment he detected the ovaries of the Conger; nevertheless, failing to recognise the very similar organ in the former species, he confidently asserted that it was not produced by ordinary generation, but spontaneously, from mud and moist soil. Doubtless the weight of Aristotle's authority was such that his assertion long remained unquestioned, and when men's minds again reverted to the subject the most absurd conjectures and assertions were plentifully abundant, but practical research was not the method then in vogue. Some of these absurd theories, which even now are not quite extinct, will be briefly referred to farther on; suffice it to say that till the year 1777 they had to do duty for the truth, and even now so much remains to be discovered that, as has been well said, 'to a person not acquainted with the circumstances of the case it must seem astonishing, and it certainly is somewhat humiliating to men of science, that a fish which is commoner in many parts of the world than any other fish, the herring perhaps excepted, which is daily seen in the market and on the table, has been able, in spite of the powerful aid of modern science, to shroud the manner of its propagation, its birth, and its death, in darkness, which even to the present day has not been completely dispelled.'

What we know for certain of the economy of the eel is that in the autumn months great numbers of these fish run down to the sea for the purpose, it is presumed, of propagating their species; but at what age or under what conditions this migration takes place is uncertain. Nor does it appear that this desire to visit the salt-water is even universal, some individuals remaining inhabitants of the fresh-water for an indefinite period; these are believed to be barren females, but whether their productiveness is only arrested, or their unproductiveness permanent is not known. Should circumstances prevent the eels from going down to the sea they appear restless for a season, but it has never been ascertained that they breed in fresh-water. After leaving the fresh-water, the future proceedings of the eels are shrouded in mystery, but from the fact of immense quantities of young eels ascending the rivers in the spring, it is naturally inferred that they spawn somewhere in the salt-water; and as the mature eels are never seen returning up stream, the inference is that they perish after having deposited their spawn. A female eel with fully developed spawn has never yet been seen, and until quite recently, as will be seen, the male of the species was altogether unknown. That the mystery which shrouds the reproduction of the eel was fully appreciated by the ancient Greeks is evident from the jocose remark made by several of their poets, to the effect that since all children whose paternity was doubtful were ascribed to Jupiter, he must be considered as the progenitor of the eels also; be that as it may, from that time till the present day the 'Eel Question' has in some respects remained an unsolved problem. The theories with regard to the reproduction of the eel have been as numerous as they were strange; as has been already said, Aristotle taught that they were evolved direct from the watery mud; more recently Gesner was of the same opinion, but also admits copulation; others, led astray by the presence of intestinal worms, asserted that the young eels were produced alive, and this has been firmly believed by many from the days of Albertus Magnus to the present time; others again believed that eels were produced, not from *eels*, but from certain *other* fish (and even insects), an opinion which also holds its own in many places till the present day. Although Franz Redi and C. F. Paullini both in the 17th century expressed opinions that the procreation of the eel differed in no respect from that of other fishes, still, they did not speak from personal observation, and it was not till the year 1777 that the female generative organs of the eel were at length really discovered and described by Carlo Mondini of Bologna. Mondini's discovery, although independently confirmed shortly after by O. F. Müller, was denied by the famous anatomist Spallanzani; and it was not till 1850 that the question was definitely settled

Naturalist,

by Rathke, who in that year published an article in 'Müller's Archiv' on a female eel examined by him, 'the first and only specimen of a pregnant eel which so far had been seen by a naturalist.' Dr. Jacoby thus describes the ovaria of the eel which had been the subject of so much controversy and which it had taken so many centuries to discover, but which may be readily detected by following his instructions.

'If an eel be opened along its lower side from the breast to a point behind the anus, there is seen besides the entrails and stomach, and underneath the back part of the liver, the long swimming-bladder, growing narrower towards both ends, and extending on one side as far as the diaphragm, and on the other a little distance beyond the anal opening. Along both sides of the swim-bladder there extends a white or yellowish band, tolerably broad and shaped exactly like a frill, whose inner edge is attached to the swim-bladder by a narrow skin, a duplicature of the inner skin of the abdomen, but whose outer edge hangs down free in the abdominal cavity. Each of these frill-like bands extends forward to the fore part of the liver, passes along the whole abdominal cavity, and ends a little distance back of the anal opening, with which, however, it is in nowise connected. In these bands, which contain a great deal of fat, numberless eggs are embedded. By tearing a little piece of this band with a pin and carefully wiping off the small drops of fat, one can recognise the eggs with the naked eye as very small white dots. The microscope, however, will distinctly reveal their form and inner construction. . . . The fact that it took several centuries of eager search to discover these ovaria is, to some extent at least, explained by the circumstance that up to the present day all attempts to discover larger and more developed eel-eggs have proved futile. It is well known that there were no good microscopes till about thirty years ago. Even the eel which was examined by Rathke, the only pregnant eel which has been found, although its distended ovaria filled the whole abdominal cavity, contained only very small eggs, the largest measuring 0.1 millimetre in diameter. Larger eel-eggs, on the point of cutting loose from the ovaria and turning to young eels, have still to be discovered.'

Hitherto reference has only been made to the ovaria of the eel, but the history of the researches for the male organs of this singular fish are not less interesting, although very recent. It was not till the year 1842 that any decided opinion as to the sexual organ of the male eel appeared; in that year Hohnbaum-Hornschuch, in a dissertation on the sex and generation of the eel, came to the conclusion that the eel was hermaphrodite. In 1871 three celebrated anatomists,—first

Ercolani, and afterwards Crivelli and Maggi jointly,—also led astray by the same appearance which deceived Hohnbaum-Hornschuch, all likewise declared the eel to be hermaphrodite. The cause of their error was, that in addition to the frill-like ovaria already described in the female eel, there will be found running alongside of each of the two ovaria, and extending through the abdominal cavity, an irregular band of fat, with many points, developed more on one side than on the other; this, which is merely 'a fold of the inner skin of the abdomen,' the anatomists before referred to mistook for the male organ of the eel, and as these folds are invariably found in all eels having an ovarium they must necessarily, had this view been the correct one, have been complete hermaphrodites. Even so late as April 1874, Prof. Münter of Greifswald, after having examined 3,000 eels, his researches extending over a period of several years, and never having met with a male fish, finds himself compelled to 'admit that eels are reproduced by parthenogenesis—*i.e.*, from non-fecundated eggs, as is the case with some insects.' It was not till November 1873 that Dr. Syrski, then of Trieste, commenced his investigations, which in the second eel he dissected were crowned with success, and the long-debated problem of the sexual difference in the eel was solved. But even then the matter was not perfectly conclusive, owing to the absence of spermatozoids; in September 1877, however, Dr. Jacoby obtained an eel with the male organs in a more advanced stage of development, in which their inner construction showed 'tube-like ducts filled with cells, exhibiting an unmistakable resemblance to the seminal cells of the testicles of other fish'; and so the matter rests at the present time, for in no case has an individual with fully developed organs of either sex been found. Syrski describes the spermatic organs of the eel as situated like the ribbon-shaped ovaries and consisting of two longitudinal rows, each of about fifty lobules of the width, at most, of three millimetres; they will be found 'by carefully turning over and laying back the fatty folds' which have been before spoken of as found in the female eel in addition to the ribbon-shaped organ, but the lobe-shaped band fastened to the backbone is often so narrow, and its substance so glass-like and transparent, that when attached to its base it can only be recognised with the naked eye when it is held in an oblique direction towards the sun.

Dr. Jacoby, during a visit paid to the great Eel Fishery at Comacchio, at the mouth of the Po, undertaken for the express purpose of further studying the 'eel question,' made some important additions to the knowledge of the life history of the eel, and, amongst other things, learned to distinguish the male from the female eels by

their exterior appearance with a considerable degree of certainty. It had not escaped the keen observation of Darwin that the male of nearly all fish is smaller than the female, and Dr. Jacoby found that the eel formed no exception to this rule, the female reaching a considerably larger size than the male is known to attain. This circumstance alone misled those who were searching for the male of the eel, as it was thought that the larger the fish the greater would be the probability of its organs being fully developed; the large females were thus actually selected, to the exclusion of the smaller males. Dr. Jacoby also found that in the male eel the snout is more pointed; the back dark green, almost black; and the sides invariably show a metallic glitter. The dorsal fin is also lower than in female eels of corresponding size, and as a rule, although not invariably, the eyes in the male are largest. Of the female eel he describes minutely two varieties: first, the fully developed female, which migrates to the sea in autumn, and which during its migration, like the male, takes no food; and secondly, the barren female, which 'never migrates to the sea, and feeds all the year round.' The latter is probably the form known in our fisheries as the broad-nosed eel or 'Gloat,' which feeds ravenously, but is never taken in the fixed nets, as it does not 'run'; the former is probably the 'silver belly' of our fishermen, which is seldom or never taken by a bait, but on its passage to the sea is intercepted by the fixed engines of the eel-fisher.

'Drawing,' as he says, 'rational conclusions from our present knowledge of the eel question,' a brief summary only of which we have been able for want of space to give, Dr. Jacoby arrives at the following conclusions:—

(1) 'For the development of their organs of generation, eels need salt-water. As has now been ascertained beyond a doubt, the eels leave the rivers and brackish lakes when their organs of generation have scarely begun to develop, and enter the sea that these organs may there reach their full development. That this migration to the sea is undertaken for the purpose of spawning is fully proved by the fact that in spring the young eels come from the sea, and this view is further strengthened by the circumstance that when the eels commence to migrate they cease to eat, just like other fish do, during the spawning season.'

(2) 'The development of the organs of generation takes place in the sea, not near the coast, but farther out in deep water. Considering the immature condition of the eels when they begin to migrate, the development is exceedingly rapid. In a few (five or six) weeks they reach maturity, according to the time when they enter the sea. Near Comacchio the eels migrate from the beginning of October till the end of December.'

(3) 'The river eels have their settled spawning places in the sea. These are mud banks, which the eels visit in large numbers for the purpose of spawning. The young fry develop on these banks, and go to the mouths of the rivers in the beginning of spring, about eight or ten weeks after their birth.'

(4) 'The old eels, both males and females, die soon after the spawning season. The extraordinarily rapid development of their organs of generation exhausts them to such a degree that they die soon after having spawned. This is the reason why they are never seen to return.'

The subsequent discovery by Dr. Otto Hermes of the mature sexual organs in the male Conger tended to confirm the investigations of Drs. Syrski and Jacoby. On the 20th June, 1879, a Conger eel, one of a number kept by Dr. Hermes in an aquarium, died, and was examined by him on the same day; to his surprise he found its sexual organs entirely different from those he had hitherto observed in eels, and upon an incision being made in them a quantity of milky fluid oozed out, which, upon being placed under the microscope and magnified 450 times, showed a large number of live spermatozoids, whose head and tail could easily be distinguished, and which moved about in a very lively manner, thus fully establishing the fact that the organs examined by him were those of the male fish.

The sexual organs in both male and female Congers are similarly placed, and generally resemble those of the river eel, the chief difference in that of the male Conger being that the lobes into which it is divided are larger and less numerous in proportion than the corresponding divisions in the same organ in the river eel; the male of the Conger, also, like the same sex in the river eel, is found to be considerably smaller than the adult female.

Such is the present state of our knowledge with regard to this, in some points, still obscure question; the direction in which farther investigation should be pursued, seeing how hopeless it appears to follow the eel in its journey to the sea, would seem to be by bringing the sea to the eel, and thus artificially producing the conditions under which its spawn is believed to be matured. This might possibly be accomplished by placing migrating eels in an aquarium and judiciously substituting sea-water in lieu of that from the river. The experiment is certainly worthy of a trial by those who have the opportunity, and should it prove successful, the reproach that modern science with all her aids and appliances has been unable to clear away the mystery which surrounds the propagation of the eel would speedily be removed.

Naturalist,

BIBLIOGRAPHY OF 1884:

Papers and records published during the year with respect to the natural history and physical features of the North of England.

PART II.—BIRDS.

(Continued from page 200.)

F. G. S. Rawson.

Birds near Halifax. Naturalist, June, ix. 194. **Yorkshire.**

Dates of nesting and arrival of summer visitants, &c.

Lucy M. Reynolds.

Harrogate. Nat. Hist. Journ., June 15th, viii. 97. **Yorkshire.**

Cuckoo [*Cuculus canorus*], May 12th; Nightingale [*Daulias luscinia*] singing from 8th to 26th.

Marian Reynolds.

Leeds. Nat. Hist. Journ., April 15th, viii. 60. **Yorkshire.**

Robin's [*Erithacus rubecula*] nest on the 30th of March.

Tom Robson.

Late Nesting. Young Nat., September, v. 230. **Durham.**

Yellowhammers [*Emberiza citrinella*] and Sparrows [*Passer domesticus*] nesting to the third week of August.

J. R. D. Romyn. **Yorkshire.**

Quail [*Coturnix communis*] **in Yorkshire.** Field, October 11th, p. 499.

One shot at Nafferton, a few days before writing.

J. E. Rowntree.

York. Nat. Hist. Journ., June 15th, viii. 97. **Yorkshire.**

Tit's nest with nine eggs.

C. F. S[mith], Bolton Percy.

A Cumberland Marsh. Field, April 19th, p. 560. **Cumberland.**

Drigg Common, which lies about a mile from Drigg Station, on the Furness Railway. The notes, which are lengthy and detailed, refer to the Peewit [*Vanellus vulgaris*], Curlew [*Numenius arquata*], Snipe [*Lymnocriptes cœlestis*], Kestrel [*Tinnunculus alaudarius*], Raven [*Corvus corax*], Great Blackbacked Gull [*Larus marinus*], Cormorant [*Phalacrocorax carbo*], Woodcock [*Scolopax rusticula*], Buzzard [*Buteo vulgaris*], Blackheaded Gull [*Larus ridibundus*], Oyster-catcher [*Hœmatopus ostralegus*], Ring-dotterel [*Ægialitis hiaticula*], Common Tern [*Sterna fluviatilis*], Lesser Tern [*Sterna minuta*], and Sandwich Tern [*Sterna cantiaca*].

J. H. Salter. **Yorkshire.**

Scarborough. Nat. Hist. Journ., May 15th and October 15th, viii. 80, 140.

Tawny Owl's [*Syrnium aluco*] nest, April 4th. Dippers [*Cinclas aquaticus*], April 10th, and other bird-notes.

Ayton. Nat. Hist. Journ., May 15th, viii. 80.

Notes on the nesting of various birds.

Howard Saunders. **Cheshire, Cumberland, Derby, Durham, Lancashire, Lincolnshire, Northumberland, Westmoreland, Yorkshire.**

A History of British Birds (by the late Wm. Yarrell, fourth edition, edited by H. Saunders). Parts xi.—xxvi. Comprising the Limicolæ (in part), Gaviæ, Tubinares, Pygopodes, Steganopodes, Herodiones (in part).

HOWARD SAUNDERS. **Yorkshire.**

Puffinus griseus at Redcar, Yorkshire. P. Z. S., 1884, p. 150; Field, March 8th, p. 340; Zool., April, p. 157.

A Dusky Shearwater—*Puffinus griseus* (Gm.)—shot off Redcar by T. H. Nelson, was exhibited to the Zoological Society.

HENRY SEEBOHM. **Cheshire, Cumberland, Derby, Durham, Lincolnshire, Northumberland, Nottinghamshire, Yorkshire.**

A History of British Birds. Part IV.

Comprises introduction to Vol. II, the families Cypselidæ, Caprimulgidæ, Meropidæ, Upupidæ, Alcedinidæ, Picidæ, Cuculidæ, Columbidæ, Phasianidæ, Pelargidæ (Herons), Pallidæ, Gruidæ, and Otididæ.

HENRY SEEBOHM. **Yorkshire.**

[On the occurrence of the American Kestrel (*Falco sparverius*) near Helmsley, N.E. Yorkshire.] P. Zool. S., 1884, p. 45.

[HENRY SEEBOHM.] **Derbyshire, Northumberland.**

The Davis Lectures. Field, July 12th, p. 12; and Land and Water, same date, p. 33.

The lecture on 'Birds' Nests' included descriptions of a trip to a Derbyshire moor and to the Farne Islands.

HENRY H. SLATER. **Northumberland.**

The Ornithology of Riding Mill-on-Tyne and Neighbourhood. Zool., March, pp. 92-106; April, pp. 142-3.

A full list, including 124 birds. The second paper supplements the first by describing the district in which the observations were made.

Yorkshire.

Barred Warbler [*Sylvia nisoria*] in Yorkshire. Zool., Dec., pp. 489 and 493.

The same record as given in the Naturalist for November, p. 91.

JAMES SMAIL. **Northumberland.**

Herons and Border Heronries. Proc. Berw. Nat. Club, x. 330-334.

The Northumberland heronries, not counting isolated nests, are eight in number, and are thus distributed: at Bolam-on-the-Wansbeck, 30 nests; at Capheaton, a few nests only; at Sweethope, near the source of the Wansbeck (number of nests not given); at Chillingham, many nests; at Unthank on South Tyne, about 14 nests; at Harbottle on the Coquet, 20 nests; and at Felton Park, on the same river, 17 nests many years ago.

C. C. SMITH (Skipton). **Yorkshire.**

Confidence of Redbreast [*Erithacus rubecula*]. Nat. World, July, i. 119.

A sitting bird allowed itself to be touched with the hand.

The Tameness of Kestrel Hawk [*Tinnunculus alaudarius*]. Nat. World, July, i. 119.

A female sitting, at Bradley, near Skipton, allowed itself to be lifted off its nest with a stick and replaced.

E. SPINK.

Early Nesting. Nat. Hist. Journ., February 15th, viii. 18. **Yorkshire.**

Near Selby, a Robin [*Erithacus rubecula*], January 18th.

JAMES STAMPER. **Yorkshire?**

Curious Variety of the Lapwing [*Vanellus vulgaris*]. Field, March 1st, p. 280.

The wings and upper part of the breast light brown or fawn colour, and the back, head, and lower part of the breast cream colour. It was afterwards shot and preserved.

W. STOREY. **Yorkshire.**

Dotterel [*Eudromias morinellus*] near Leeds. Field, September 18th, p. 530.

One shot on Pateley Moor, September 10th—its only occurrence in the district. Editor quotes Clarke and Roebuck's observations on the species.

W. STOREY. **Yorkshire.**

The Stonechat [*Pratincola rubicola*] **in Nidderdale.** Field, October 18th, p. 530.

One shot by Mr. E. E. Cass, at Backstone Gill, near Pateley Bridge, October 7th. Writer quotes Lucas' Studies in Nidderdale—and Editorial note is appended.

R. J. STREATFEILD. **Yorkshire.**

A Large Pheasant [*Phasianus colchicus*]. Field, November 22nd, p. 729.

A male killed at Rossington, near Bawtry, November 13th, weighing 5 lb. 0¼ oz.

F. R. SURTEES. **Lincolnshire.**

Derivation of the name Knot [*Tringa canutus*]. Field, January 26th, p. 99.

'There can be no reason, then, to doubt that, in Canute's days, they abounded in the fens of Cambridge, Lincoln, and Norfolk.' [On migration and in winter.]

M. E. T.

Geese Migrating. Sci. Goss., April, p. 74. **Cheshire.**

Wrenbury, Cheshire.

E. V. THOMPSON. **Yorkshire.**

Grey Phalarope [*Phalaropus fulicarius*] **in Yorkshire.** Zool., January, p. 31.

A mature bird, in full plumage, shot in Cayton Bay, near Scarborough, December 6th, 1883.

RICHARD H. THOMPSON. **Lancashire.**

Surf Scoter [*Œdemia perspicillata*] **on the Coast of Lancashire.** Zool., January, p. 29.

A fine female *Œdemia perspicillata* shot December 9th, 1882, in the Ribble estuary, off Lytham. Named by A. G. More.

[T. THOMPSON]. **Cumberland.**

[Bird-notes]. Nat. Hist. Trans. Northumb., Durh. and New., Vol. viii. p. 2.

A nest with the unusual number of ten eggs of the Sparrow-hawk [*Accipiter nisus*] taken near Gilsland, April 1878. In the spring of 1879 a pair of Long-eared Owls [*Asio otus*] reared their young in the same nest.

JOHN E. TINKLER. **Yorkshire.**

Ornithological Notes from N.W. Yorkshire. Zool., April, pp. 131-139.

The notes, which refer to numerous species, given in systematic order, were all made in Upper Swaledale and Arkengarthdale, with one or two casual references to Wensleydale.

Notes from N.W. Yorkshire. Zool., May, p. 196.

Corrects his error as to the Common Gull (*Larus canus*) breeding in Arkengarthdale, and states that the birds noted were probably Blackheaded Gulls (*Larus ridibundus*).

H. B. TRISTRAM. **Durham, Northumberland.**

Address to the Members of the Tyneside Naturalists' Field Club, . . . April 15th, 1880. N. H. Trans. Northumb., Durham, & Newc., viii., 1-12.

Notices of birds observed at the field meetings of 1879—viz., at Rothbury, Northumberland: at Holy Island and Bamborough; at Cornhill, Northumberland; and at Blanchland and Benfieldside, Co. Durham.

JULIAN G. TUCK.

Lesser Black-backed Gull [*Larus fuscus*] **on the Yorkshire Coast.** Zool., December, p. 485.

On the improbability of the species breeding, as suggested in Mr. T. Carter's note on egging on the Yorkshire coasts.

R. TURNBULL. **Northumberland.**

Eider Duck [*Somateria mollisima*]. Sci. Goss., June, p. 142.

One at the Farnes dropped an egg into the nest of a Lesser Black-backed Gull (*L. fuscus*), and then took possession of and sat on the latter's nest and three eggs.

VARIOUS WRITERS. **Mann, Cmbd., Westm., Nthmbd., Dhm., Yks., Lancs., Chesh., Notts., Lincs.**

The Naturalist (current volume, numbers for Aug.-Dec.) contains numerous records which it will be unnecessary to cite here in detail.

CHARLES DE VIT.

Great Ayton. Nat. Hist. Journ., June 15th, p. 97. **Yorkshire.**

Linnet's [*Linota cannabina*] nest with three *white* eggs.

FREDERICK T. WALKER.

Birstwith, Harrogate. Nat. Hist. Journ., March 15th, viii. 39.

Robin's [*Erithacus rubecula*] nest and four eggs on the 29th January.

H. SNOWDON WARD.

Extinction of Species. Nat. World, June, i. 83-84. **Yorkshire.**

Passing note that in a secluded Yorkshire valley is a heronry where the keeper is in constant dread of the 'naturalists.'

Swallows [*Hirundo rustica*] **in Church.** Sci. Goss., August, p. 191.

At Rylstone Church, Wharfedale, on the 6th July.

E. W. WEST and 'IBIS.' **Yorkshire.**

Tufted Duck [*Fuligula cristata*] **Breeding in South Yorkshire.** Field, August 2nd, p. 153; August 9th, p. 219; and August 16th, p. 246.

On p. 153 E. W. West writes that three pairs hatched young on a secluded island in one of the lakes in Wentworth Park, about a fortnight ago. Full particulars given. 'Ibis' writes at p. 219 to say that the Ducks breeding at Wentworth are introduced and preserved by Earl Fitzwilliam. E. W. West writes at p. 246 that he is glad his note had elicited the fact of introduction. The keepers could not tell him.

Derbyshire, Yorkshire.

Nesting of the Hawfinch [*Coccothraustes vulgaris*] **in North Yorkshire.** Field, August 30th, p. 300.

One or more pairs breed every year at Stoke Hall, near Chatsworth. Three instances of nesting near Rotherham, one of them in 1883. Large flocks in South Yorkshire every winter.

J. WHITAKER.

Scaup Duck [*Fuligula marila*] **in Notts.** Zool., February, p. 70. **Notts.**

One shot on Mansfield Reservoir, December 1st, 1883.

Common Buzzard [*Buteo vulgaris*] **in Nottinghamshire.** Zool., Feb., p. 73.

One caught alive at Fountain Dale; date not given.

Birds hovering over Dead Companions. Zool., April, p. 149.

The writer enumerates several birds he has known to do it, instancing particularly the Green Plover [*Vanellus vulgaris*].

Arrival of Summer Birds. Field, May 3rd, p. 597; and May 10th, p. 651; Land and Water, May 3rd, p. 415.

Dates of arrival at Mansfield, Notts., are given thus:—Chiffchaff [*Phylloscopus rufus*] and Wheatear [*Saxicola œnanthe*], April 2nd; Sand Martin, [*Cotile riparia*], April 12th; Willow Wren [*Phylloscopus trochilus*], April 14th; Swallow [*Hirundo rustica*], April 15th; Blackcap [*Sylvia atricapilla*] April 16th; Redstart [*Ruticilla phœnicurus*], April 17th; Cuckoo [*Cuculus canorus*], April 20th; Tree Pipit [*Anthus trivialis*], April 22nd; Whinchat [*Pratincola rubetra*], April 26th; Common Sandpiper [*Tringoïdes hypoleucos*] and Corn-

crake [*Crex pratensis*], April 29th; Sedge Warbler [*Acrocephalus phragmitis*] and Martin [*Chelidon urbica*], April 30th; and Whitethroat [*Sylvia curruca*], May 6th.

Varieties of Coal [*Parus britannicus*] **and Long-tailed Tits** [*Acredula rosea*]. Land and Water, May 10th, p. 439.

The variety (pied) of the Cole Tit was shot at Southwell, Notts.

Variety of the Sky Lark [*Alauda arvensis*]. Zool., June, p. 230.

In Nottinghamshire; with some white wing-coverts and flight-feathers.

Song of the Tree Sparrow [*Passer montanus*]. Zool., June, p. 232.

Writer describes the song of a bird heard at Rainworth, Notts.

Montagu's Harrier [*Circus cineraceus*] **in Nottinghamshire.** Zool., Aug., p. 341.

First authentic record for the county. A young male trapped in the forest.

Curious Site for a Redstart's [*Ruticilla phœnicurus*] **Nest [near Mansfield, Notts.]** Zool., August, p. 339.

In a wood, on the ground, under some dead leaves, with a run six inches through the leaves to it.

Dotterel [*Eudromias morinellus*] **in Nottinghamshire.** Zool., Sep., p. 383.

Thirty seen (three shot) about three miles from Nottingham during the last week of April.

Wood Sandpiper [*Totanus glareola*] **in Nottinghamshire.** Zool., November, pp. 468-9.

One shot on the Mansfield Reservoir, first week of August. Other species mentioned as seen.

White Wood Pigeon [*Columba palumbus*] **and other varieties [near Mansfield].** Zool., December, p. 487.

One nearly white seen on September 8th; also a white Sparrow [*Passer domesticus*], a white Lark [*Alauda arvensis*], and a cream-coloured Wagtail [? *Motacilla lugubris*].

JOHN WRIGLEY. **Lancashire.**

Fulmar Petrel [*Fulmarus glacialis*] **near Liverpool.** Field, Feb. 9th, p. 169.

An adult found exhausted on the shore at Formby, on the 14th January, was kept alive by the captor.

YORKSHIRE NATURALISTS' UNION. **Yorkshire.**

Reports of Excursions. Naturalist, June, ix. 198-200; July, ix. 216-220; Records and Obs. Rotherham Nat. Soc., No. 1 (July), pp. 7-9.

Field notes on the birds observed on the 8th May, at Roche Abbey; and on the 2nd June, at Sherburn-in-Elmete.

CONCHOLOGICAL NOTE.

Mollusca at Anston Stones.—In the valley itself *Pupa umbilicata* and *Clausilia rugosa* abound; also *Cochlicopa lubrica*; many of the latter are of the var. *viridula*, and are to be found upon the crags and large stones among damp moss, &c., and in the same situation *Z. glaber*.

I have also preserved specimens of *V. antivertigo* (found near the stream), *Z. nitidulus*, *Z. purus*, *H. hispida*, *H. rotundata*, and *Planorbis albus*. I have no doubt many other species are to be found in abundance. Only a short distance from Anston I have found *V. minutissima* plentifully, near to Kiveton Park Railway Station (M. S. & L. Railway). On leaving the station in the direction of Anston the road winds up a steep hill; just at the brow of the hill there is an old wall dividing the road from a small plantation, and among the grass at the root of the wall I have found *V. minutissima* in considerable numbers; also *H. aculeata* along with them. I mention the particular spot, as I have not been able to meet with the former in any other district in the neighbourhood.—EDGAR PICKARD, Crow Hill, Mansfield, April 16th, 1885.

MAMMALIAN NOTES.

Sperm Whale stranded at Grimsby in 1563.—[We are indebted to Mr. J. Hopkin, of Great Grimsby, for the following extract.—Eds.]

Description of a large Fish driven on shore at Great Grimsby in 1563.—'In the monthe of Decembr 1563 was drevyn on y^e^ shore at Grymsby in Lyncolne-'shire a great & monsterus fysh being in length xix yerdes his tayle 15 fete brode '& the length of 6 yerdis betwene his 2 eyes he had in his 2 lowar . . . . . 'Jawes 92 tethe & none aboffe Euery tothe weyed 1 lb & 1 oz in the rofe of 'his mouthe he had a harp with a string naturally his heygth could not be then 'desernyd for that he lay so depe in the sande there might walke in a ranck 3 men 'betwen rib & rib & robrt pinder habdasshr affermyd that he w^t^ other men did 'see 12 men stand in the mouthe of here to saue the oyle that she had & the 'toke out of her hed more than 2 tonne of oyle There was 14 dayes before the 'comyng of the sayde pinder 30 men workyng about her & were not into ye rib of 'her The townsemen of Grymsby did off 200*£* for the oyle that was in her.'—From a Book in 4to, consisting of fragments & loose papers, &c., Harl. MSS. Brit. Mus. In the manuscript the '2' before 'lowar' was inserted above the line, and the hiatus shown above between 'lowar' and 'Jawes' was occupied by a word or words which appeared something like 'oljaytor.'

[The creature being evidently a Whale, we submitted the extract to Mr. Thos. Southwell, F.Z.S., of Norwich, well known as an authority on the cetacea, and he has favoured us with the following remarks.—Eds.]

The above extract evidently refers to a full-grown Sperm Whale (*Physeter macrocephalus* L.), and is interesting as being, so far as I have been able to ascertain, the first recorded specimen of this species on the British coast, although one—the skull of which is preserved in the Church of Great Yarmouth in the form of a chair, and for the painting of which 8s. is charged in the churchwardens' accounts in the year 1606—must have been taken within probably a few years of it. In 1577 three whales of this species were taken in the Scheldt, and from that time to 1646 many records of the stranding of others exist, from the Mediterranean to the coast of Scotland. They were generally solitary, but occasionally in small 'schools,' the former probably being old males, and the latter females. In recent times, however, this species has been a very rare visitant so far north, the last instance, I believe, being in July 1871, when one was stranded on the shore of the Isle of Skye.—T. Southwell, Norwich, April 15th, 1885.

Badgers and Red Deer in Upper Wensleydale.—The two Badgers (*Meles taxus*) let off months ago in Clough Wood, Fossdale, by Lord Wharncliffe, are there still, and were seen last week. [One of these was no doubt the specimen recorded in the *Naturalist* for September 1884, p. 34.] Two or three weeks ago there was a (semi-wild, I suppose) Red Deer (*Cervus elaphus*) on Stags Fell, ranging about the high moorland of Shunnor Fell and over into Fossdale. Query, was this a stray animal from Martindale Moors?—F. Arnold Lees, Hawes, Wensleydale, February 2nd, 1885.

Badgers in Nidderdale.—Since recording the last occurrence of the Badger (*Meles taxus*) in Nidderdale in the April *Naturalist*, I have learnt that a female was taken alive by Mr. Charlton of this place in 1849, which weighed 23 lbs.—W. Storey, Pateley Bridge, April 10th, 1885.

Badgers at North Stainley, near Ripon.—I see a notice in the *Naturalist* for February, of a Badger having been taken in a fox earth, at Slenningford in this parish, in December 1883. You will, perhaps, like to know that there was a second one captured here that same winter, in a steel rabbit trap, set in a hedge in a farm, some distance from any covers. The latter one is a splendid specimen, and has been stuffed.—R. A. Summerfield, North Stainley Vicarage, Ripon, February 23rd, 1885.

Black Rat at West Hartlepool.—A Black Rat was caught in Messrs. E. Whitley & Co.'s shipyard, West Hartlepool, on the 9th of March, 1885, and forwarded to the Clifton Zoological Gardens.—R. Morton Middleton, jun., Hudworth Cottage, Castle Eden, Co. Durham, April 16th, 1885.

THE OOLITES OF THE CAVE DISTRICT.

By ALFRED HARKER, B.A., F.G.S.,

Of St. John's College and the Woodwardian Museum, Cambridge.

The strip of Oolitic rocks lying on the western side of the Yorkshire Wolds is deserving of more notice from geologists than it has yet received, forming, as it does, a connecting link between the dissimilar areas of Lincolnshire and North-East Yorkshire. The whole district indeed possesses considerable interest from its comprising a great range of formations in a small compass. A traverse three miles in length may be made from the Trias to the Chalk, embracing Lower, Middle, and Upper Lias, Lower, Middle, and Upper Oolites, and Neocomian.

The Jurassic strata strike N.N.W. from the Humber in the neighbourhood of Brough to near Market Weighton, a distance of about ten miles. They dip easterly under the Chalk of the Wolds, at the base of which occur a few feet of red and yellow, marly and nodular Chalk, as at Speeton, Hunstanton, &c. The unconformity below the Chalk is well marked in this district, for at Welton and Brantingham dales that formation overlies clays probably of Neocomian age (the equivalent of the Speeton Clay), while northward it gradually creeps over older strata, until at Goodmanham, near Market Weighton, the Red Chalk, with its characteristic fossils in abundance, rests upon the Lower Lias. Westward the Middle and Lower Lias form low escarpments overlooking the Triassic plain, as at North Cliff, where a fine exposure shows beds with *Lima gigantea*, *Modiola minima*, &c., belonging to a lower horizon than any exposed on the coast. The Liassic beds of this district have been fully described by Messrs. Tate and Blake, but the Oolitic rocks seen between them and the Wolds have received but little remark, not being noticed in Mr. Hudleston's otherwise exhaustive papers on the 'Yorkshire Oolites.'

The strike of the beds is uniform, but owing to their low angle of dip their outcrops are thrown into sharp bends to the East by the little valleys at North Cave, Newbald, and Sancton. It is worthy of note that each of these valleys is coincident with a line of faulting: the faults are at right angles with the strike, and of inconsiderable throw.

The Lower Oolites are represented chiefly by 'roestones' or impure Oolitic limestones with some beds of sand (as at Ellerker, &c.). The Oolite is often flaggy, but sometimes thick-bedded and suitable for building purposes: in some places it is hard enough to take a polish. It is generally yellowish-brown in colour, owing to weathering,

May 1885.

but the more thick-bedded portions are blue-hearted. The greater part of the series is poor in fossils, but yields a few *Trigonia conjungens*, *Lima*, &c., with the 'millepore' or *Cricopora straminea* of Phillips: these serve to connect the beds with the Millepore Oolite of the Coast and the Howardian Hills, which is found to thicken in this direction. In a quarry a little north of Brough, however, there occurs, apparently low down in the series, a very fossiliferous horizon. Here are found the little spiny *Rhynconella Crossii* (Walker), *Pinna cuneata*, *Myacites decurtatus*, *Pecten demissus* and *lens*, curiously crushed specimens of *Cardinia* and *Terebratula*, and many other fossils. A small costate *Trigonia* occurs in the lowest bed here exposed. I was fortunate enough also to discover a fine *Hybodus* tooth. We have here a link between the Yorkshire Lower Oolites and the 'Lincolnshire Limestone.' *Rhynconella Crossii* occurs at Appleby in the latter county.

The most important member of the Middle Oolites is the Kelloway Rock, which reaches a thickness of more than forty feet, and in its hard upper beds forms a feature at the surface. Lithologically as well as palæontologically it bears a fairly close resemblance to the corresponding strata in Newtondale and Cayton Bay. The best section is in the 'Town Quarry' at North Newbald. At the base are about fifteen feet of loose reddish sand, with fossils abundant but badly preserved: *Avicula inæquivalvis* and *Braamburiensis*, *Goniomya literata*, *Pholadomya obsoleta*, and *Pecten fibrosus* are characteristic. Above this comes soft, homogeneous, micaceous, white sandstone to the thickness of twenty feet, without fossils, except for fragments of wood and a band in the middle, crowded with *Belemnites*. At the top come red-brown sands, more or less consolidated by ferruginous and calcareous cement, about five or six feet being seen. These contain a great variety of fossils, among which may be mentioned *Gryphæa bilobata* (very abundant), *Ammonites Kœnigi*, *sublævis*, *duncani*, *gowerianus* and *cordatus*, *Belemnites owenii*, *Pinna mitis*, *Trigonia rupellensis* (?), *Modiola cuneata*, *Astarte* (a small species), and *Waldheimia ornithocephala*. *Rhynconella socialis*, both flat and convex forms, is very common both here and in the lower sands. The preponderance of lamellibranchs in the lower part and cephalopods in the upper is in accordance with what is seen in the Cayton Bay and Scarborough sections.

A peculiarity of the Kelloway Rock is the occurrence of very large hard concretions, which sometimes assume regular forms, spheroidal and cylindrical, and are locally known as 'eddystones'; some are more than three feet in diameter. The rock is seen in

several places along its line of outcrop; only the white barren sands are visible at Sancton Church, while the highest fossiliferous bed is well exposed just south of South Cave. A fine section of the whole was laid bare during the works for the Hull and Barnsley Railway two years ago. The cuttings of this railway afforded exposures of most of the Jurassic rocks of the neighbourhood: they are since mostly grassed over, but a description by Messrs. W. Keeping and Middlemiss was given in the 'Geological Magazine' for May 1883.

The Kelloway Rock is probably the source of much of the sand in the local drift: the red colour of the rock is due to an external coating of ferruginous colouring matter on each grain; the colour was found to be completely bleached by dilute hydrochloric acid.

The formation in question thins out to the north and west of Sancton, apparently owing to an overlap, which thus obscures the normal relation of the rock to the underlying strata; but although no equivalent of the 'Avicula-shales' has been proved, the fact that the base of the sands at Sancton, Newbald, and Drewton cutting becomes argillaceous downwards is another point of similarity with the Coast sections.

The Kelloway Rock is abruptly overlain by a tenacious blue clay, of which about twelve feet were seen in the railway cutting, the top not being shown. A few *Gryphæa dilatata* occur, and at the base abundance of *Belemnites owenii*, with crystals of selenite and irony concretions. This is the Oxford Clay, and the interesting feature about it is its lithological resemblance to the corresponding strata at St. Ives, &c., in contrast to the grey, sandy, crumbling shales which represent the formation in North-East Yorkshire.

There is no evidence of any members of the Corallian series occurring in the Cave district, although pebbles of Coralline Oolite, with *Chemnitzia*, &c., are found in the local drift about South Cave and Brough. The Kimmeridge Clay occurs, but, like the Oxford and Upper Lias Clays, it makes no show at the surface, and is difficult to detect. There is no doubt, however, that some of the black shaley clay underlying the Chalk of the Wolds is referable to the Kimmeridge series, and *Ostrea deltoidea* has been found near Elloughton and Brantingham. The clay exposed in the railway cutting at Weedley seems by its aspect and the Belemnites it yields to belong to the Neocomian, a formation much more widely developed on the west side of the Wolds than is generally recognised. The impervious nature of the clay causes it to 'throw out' the water which soaks through the overlying chalk, so that the outcrop of the Red Chalk is marked all round the outer edge of the Wolds by a

line of springs; as, for instance, at the entrance to Welton Dale, at Brantingham, Drewton, Newbald, Burdale, Wharram, &c.

The Cave district contains many other places of geological interest. At the head of Drewton Vale is St. Austin's Stone, a great mass of brecciated flint weathered out from the Chalk, like the 'Fairy Stones' of Burdale. At Bielbecks is the lacustrine deposit which many years ago yielded tusks and bones of the *Mammoth*, *Rhinoceros*, *Hyæna*, &c., with many species of modern shells. The drift deposits, too, are worthy of attention, consisting for the most part of sand and gravel of local origin, and probably of Post-glacial age. In some places large masses of drift seem to have been directly derived, almost without disintegration, from the neighbouring strata: such are the patches of re-arranged Lower Lias about Cave, with great profusion of *Gryphæa incurva*, which shell is sometimes used for road-metal. The pebbles in the gravels are often scratched, as if by friction against one another.

CRYPTOGAMIC NOTES.

Surirella elegans, etc., in West Yorkshire.—Diatomists may be interested in hearing of a Yorkshire habitat for *Surirella elegans* Ehr. I found it in abundance in a gathering made by my friend, Mr. G. Sturt, F.R.M.S., from the surface of stones in the little river Skell, near Fountains Abbey, in September last.

This fine species is not named by W. Smith in his Synopsis of British Diatomaceæ, and has hitherto been rarely found in a living state in Britain, though it occurs in Lough Mourne and other diatomaceous deposits in Ireland and Scotland. Mr. Kitton tells me he has had it from two localities only, in a recent state, and Dr. Stolterfoth has found it also recent in N. Wales. The above is the only place in which I have met with it.

The same gathering, which comprised about 70 species, included *Navicula reinhardti* Grun., and *N. trochus* (Ehr. ?) Greg., both new to me as occurring in a living state in England.—E. Grove, Saltburn, April 1st, 1885.

Habitats of Freshwater Algæ.—We should have been glad if the distribution (as far as it is known in this comparatively neglected group) had been better indicated in Dr. Cooke's 'British Freshwater Algæ'; for instance, such species as *Sphæroplea annulina* and others which some of us did not previously know as 'British,' might have been localised. We should also have liked to have seen some of the habitats well defined, a most useful thing to workers, and which is well appreciated in such works as Schimper's '*Muscorum Europæorum*.' *Botrydina vulgaris* we oftenest find on the leaves and stems of alpine and sub-alpine mosses; in fact, on those species which delight in mists. *Sirogonium sticticum* we usually find in those *streamy* pools which are *well aerated*, and in which several species of *Vaucheria* also delight. 'Britain' is often used as a locality; it seems to us a somewhat vague term, for a species thus indicated might possibly have never been seen below an elevation of 2000 feet or above an elevation of 50 feet. 'Ditches and ponds' is the habitat to *Cylindrospermum macrospermum*; shady places in gardens might be added, as we have generally found it in such places. *Rivularia calcarea* has its habitat defined as 'on rocks and stones in streams'; we should be glad to learn if it occurs on any other formation than limestone or chalk; it is abundant in the beds of some of our upland streams *which are highly charged with carbonate of lime*, as in Gordale, W. Yorkshire, at 1200 feet. *Petalonema alatum* and *Scytonema myochrous* have always been found by us on dripping *perpendicular limestone* rocks.—W. West, Bradford.

Naturalist,

BOOK NOTICES.

Ornithology.—By Alfred Newton, M.A., F.R.S., F.Z.S., F.L.S., Professor of Zoology and Comparative Anatomy in the University of Cambridge. Reprinted from the 'Encyclopædia Britannica' [Ninth edition, vol. xviii., pp. 1-50] by special permission. For private circulation.

In this most admirable and concise article Professor Newton deals with the more scientific side of ornithology, in the vast literature of which there is 'much that does not enter into the domain of science,' since it ranges from the 'recondite and laborious investigations of the morphologist and anatomist to the casual observations of the sportsman and the schoolboy.'

In order to give some idea of the amount of information so marvellously epitomised in the fifty pages before us, we may say that their contents fall under three headings.

I. A chronological notice of the chief ornithologists from Aristotle to the present time, with particulars of the more important of their works. This section includes notices on the labours of more than a hundred naturalists.

II. A survey of the works bearing on the faunal aspect of the science, with an enumeration of the principal works on the avifauna of all countries.

III. A review of the work of the more advanced school of ornithologists in the important question of classification, which may be said to have been initiated by Nitzsch in 1806. This section comprises a sketch of and remarks on all the various systems which have been promulgated.

The article bears all the evidence of being the production of a master in the science, and, like all Professor Newton's writings, it is written with enviable conciseness, combined with facility of expression and explanation, and doubtless, too, with a care that ensures freedom from error—a characteristic which renders him a most worthy example for all who would engage in scientific literary work.

We regret one thing, however, and that is that the Professor has not given us a sketch of his own ideas on the classification of this difficult class. This we consider was a great desideratum, and would have been highly valued. In the concluding portion of the article, nevertheless, we have his opinions on the relationship and true position of various groups, which cannot fail not only to be of deep interest, but also to have much weight with future systematists.—W. E. C.

A Flora of the English Lake District.—By J. Gilbert Baker, F.R.S., F.L.S. Demy 8vo, pp. 262. London: Geo. Bell and Sons, 1885. 6s.

We have little but praise to accord to this the latest of British local floras. A paragraph of general praise is, ordinarily, a poor compliment to pay to a book such as this—which must have been in more than the usual degree a labour of love; but where the author is *facile princeps* at the work, and the result such as to be well-nigh beyond cavil, what *is* a reviewer to say? The flora would be found somewhat of a 'skeleton' one by residents or others very well acquainted with the region of which it treats—that is to say, it is more sketchy and less exhaustive than the author's 'North Yorkshire,' or even his Durham flora, and the masterly analysis and generalisation there found are here missed; but the facts at command have been marshalled in a telling and lucid manner; and, it goes without saying, with the rare discrimination of wide experience.

The region treated of is defined as 'a mountainous tract with a distinct physical individuality of its own, and with a distinct botanical individuality also, both in respect of the plants that are present and those that are rare or absent,' this district of Lakeland embracing parts of three counties: roughly, the south-western half of Cumberland, the western half of Westmoreland, and that portion of Lancashire detached from the main body of its county by the Morecambe estuary of the river Kent; the plants common to all, or confined to some of these comital areas, being indicated in the enumeration of the 893 species accepted; that number being contrasted, as to distribution of the Watsonian Types, with 935 accepted for Northumberland *with* Durham, and 992 for 'North Yorkshire,' with the result that, reckoning 532 species as *general* for Britain as a whole (out of 1425) 606 southern and 238 northern, practically all of the 532 are present in Lakeland, 231 (little more than a third) of the southern, and 125 (or more than half) of the northern: very much indeed what one would have expected. It seems a pity that the area

was not made to take in the great Triassic Carlisle plain and the eastern slope (west Pennine face) of the vale of the Eden, since *Viola arenaria* and some other plants are thereby excluded, and plant stations which are connecting links in the chain of distribution between the Cumbrian and the Yorkshire hills remain of necessity unindicated. True, these were dealt with in a paper by the same author 'On the Dispersion of Montane Plants over the North of England,' in the *Journal of Botany* for 1871; and, probably, a trustworthy tourist's flora of 'the Lakes,' albeit awkwardly situated in conterminous parts of three counties, was more likely (from a publisher's point of view) to command a remunerative sale than a county flora upon strictly scientific lines.

We are told (p. 5) that 'one of the principal characteristics of the Lake district,' climato-botanically, 'is that, broadly speaking, cultivation does not reach up to the top of the super-agrarian, but only to the top of the mid-agrarian zone (*i.e.*, only to 900 feet alt.), and that consequently at the Lakes the highest localities of a crowd of plants that follow in the footsteps of man are a whole zone or half a zone below their proper climatic limits, and the super-agrarian flora at the Lakes is materially smaller than in the eastern counties.' The foregoing, with the additional statements that the average annual temperature of this super-agrarian zone (900 to 1800 feet on the hill sides) 'may be estimated at 42° to 45° Fahr., and its upper limit marked botanically by the cessation of *Pteris*, *Digitalis*, *Erica*, *Parnassia*, and *Pinguicula*,' make up almost the only generalisation with which students are favoured.

Hardly any slips, or omission to take note of published records, are discoverable. In the *Naturalist* (vol. iv., p. 67) for December 1878 was a paper by the late Rev. R. Wood, naming a century of Cumbrian plants (many of them Aliens) not given for the county in *Topographical Botany*, Ed. I., most of which appear in this Lakeland flora from other sources. This particular list, however, would seem not to have been referred to at all, since its records for *Myosurus minimus* (Wigton), *Ononis spinosa* (Westward), *Rhinanthus major* (Culton, Wigton), *Carex disticha* (Westward), and *Juncus maritimus* (Kirkbride) are unmentioned, although it is, wisely, part of the plan of the flora to give a line even to those records it rejects as doubtful or certainly erroneous. A Lake-Lancashire locality for *Lotus tenuis* Kit., published eleven years ago, (Report Bot. Loc. Record Club, 1873, p. 18), 'meadow, W. side Humphrey Head, has also been overlooked, other notices in the same series of reports being duly registered.

A slight seeming inconsistency in the acceptance or rejection of 'species' for enumeration is here and there observable: *e.g.*, *Geum intermedium* is sunk in *G. urbanum* as being 'a variable hybrid'; *Lotus tenuis* given as a mere variety of *L. corniculatus*; *Potamogeton zizii* regarded as a variety of *heterophyllus* instead of the *P. lucens* to which it is usually referred, whilst, *per contra*, *Stachys ambigua* and *Salix ambigua*, both undoubted hybrids, are, to go no further, given the separate treatment accorded to undoubted ver-species. No doubt these departures are not purely arbitrary, but the explanations obviously do not lie on the surface.

Regarding Absentees from the district, some strange statements, unaccountable if ultimate search proves them to be fact, are made. *Sclerochloa maritima* is not known apparently for the salt marsh tracts bordering Morecambe Bay, and, stranger still, there is no record for *Sclerochloa distans* on the sandstone or on the Walney sands! *Crepis succisifolia*, Tausch., is absent, *Saginas maritima* and *ciliata* practically ungathered, and *Trientalis* (spite of Hudson's mention of it as a West-moreland plant) not admitted. It, however, grows near Kirby Stephen. The Stock-ghyll (Ambleside) *Pyrola* is certainly *minor* Swartz, in part, at least, although *P. media* has also occurred there, and it is likewise a Lake-Lancashire plant.

Myrrhis odorata and *Symphytum officinale* are ranked as Denizens only, whilst it is noticeable that not only the Daffodil, but also *Polygonatum multiflorum* (the generally-cultivated Solomon's Seal) and Chives (*Allium schœnoprasum*) are accepted as true Natives in the area under consideration.

Lastly, it is singularly suggestive to learn that in genera of which the forms or 'species' vary much, such as the Brambles, we get, perhaps (the high alpines apart), a truer glimpse of the kind of influences exerted by the configuration (and resulting climatic and stational variety) of a district than is afforded by the great bulk of well-marked individual species. Of the 46 Babingtonian Brambles,

nearly all the very hairy-glandulose types, such as *Bloxami*, *scaber*, *hystrix*, *dumetorum*, and *glandulosus* are absent, as well as the common and well-marked southern form of *thyrsoideus*; lowland sandstone levels being richest in these. In the Dog-Roses, too, it seems strange to be told that the Hispidæ should be so markedly scarce; whilst those of the series with erect sepals, persisting on the fruit (delayed maturation and decay?) should be characteristically developed in abundance. The Hawkweeds, apparently, exemplify the same thing in a less degree: *murorum* (we are informed) rare, *pallidum* frequent, *Iricum*, *prenanthoides* and the abundant Yorkshire-dale *tridentatum* either quite or almost wanting.

The work is very well printed, on good paper, and well bound; its size, large 8vo, alone prevents it from slipping easily into an ordinary coat pocket.

NOTES AND NEWS.

We shall be glad to give in our next issue the dates of arrival of the spring migrant birds this season throughout the North of England, if our readers in all parts of the Northern Counties will furnish us with notes of their observations upon the subject.

The officers of the Stockport Society of Naturalists for 1885 are: Mr. Thomas Kay, president; Dr. Bahin, M.A., Mr. F. Hudson, Mr. G. W. Davies, F.C.S., Mr. Alfred Willett, and Mr. T. Entwistle, vice-presidents; Mr. T. H. Rathbone, treasurer; and Mr. S. Wakefield, secretary.

We hear, with great regret, of the death of Mrs. Burdon, of Parklands, Castle Eden, Co. Durham, widow of the late Mr. Rowland Burdon, J.P. Mrs. Burdon, who was an excellent botanist, died on the 10th of March last. For nearly half a century she was the faithful guardian of the Lady's Slipper Orchis (*Cypripedium calceolus* L.) in one of its last-remaining British habitats. Her collection of living alpine plants was one of the finest in the North of England.

At the anniversary meeting (Feb. 20th) of the Geological Society of London the balance of the proceeds of the Wollaston Donation Fund was given to Dr. Charles Callaway, F.G.S., who was at one time curator at the Sheffield Public Museum, as a recognition of the value of his researches among the older British rocks. The balance of the proceeds of the Lyell Donation Fund was at the same time awarded to Mr. A. J. Jukes-Browne, whose Lincolnshire work is well-known, in recognition of the excellent work he has done on the Cretaceous rocks and on glacial geology.

The Manchester Microscopical Society, one of the most vigorous and progressive organisations of its kind, held its fifth annual meeting on the 26th of February. The report was highly satisfactory, and showed that the membership had risen from 120 in 1881 to 196 in 1884, and 233 at the present time. The Mounting Section, a most useful feature of the Society, was referred to as having an average attendance at its meetings of 32 out of a nominal roll of 69 members. Its work was now not merely confined to demonstrations of the processes of preparing and mounting objects, but had been extended to the exhibition and explanation of the accessory apparatus used for illumination. The curator reported that 126 slides had been presented during the year, and the librarian that the books had been freely used. The election of officers resulted in the election of Dr. Tatham as president for a second term.

We are glad to note that Dr. M. C. Cooke's 'British Freshwater Algæ' is now completed. It is a work which will be found extremely useful—and it will be indispensable to all cryptogamic botanists, who will now have the pleasure of consulting its pages along with their old friend Rabenhorst's 'Flora Europæa Algarum.' The work includes no less than 130 coloured plates, comprising a large number of figures, with which but little fault can be found. The descriptions are well written, and the larger genera are clavically divided. The weak point is in the notices of distribution and habitat, to which apparently but little attention is paid by Dr. Cooke. We have pleasure in printing in the present number some remarks on these points by a well-known student of the group, whose criticisms are, however, by no means to be taken as being in disparagement of the work, but rather as hints given in a friendly spirit to show where books of this kind can by a little attention be readily improved.

METEOROLOGICAL RETURNS FOR FEBRUARY 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

NAME OF STATION; ITS HEIGHT ABOVE SEA-LEVEL; AND NAME OF OBSERVER.	Atmospheric pressure. Mean Height of Barometer (reduced to zero and to sea-level).	TEMPERATURE (IN SHADE). Mean Temperature for Month.	Extremes. Highest Maximum registered. Amount.	Highest Maximum registered. Date.	Lowest Minimum registered. Amount.	Lowest Minimum registered. Date.	RAINFALL. Total Rain Collected.	Number of Days on which there fell 0·01 inch or more.	Greatest Fall in a Single Day. Amount.	Greatest Fall in a Single Day. Date.
ISLE OF MAN:	inch	deg.	deg.		deg.		inch		inch	
CRONKBOURNE (140 ft.).... A. W. Moore, F.M.S.....	29·530	41·37	50·9	25th	27·60	20th	4·328	22	0·588	2nd
W. COAST: SILLOTH, CUMB. (28 ft.) .. Rev. F. Redford, M.A...	29·508	40·80	52·00	27th	23 80	21st	3·826	21	0·700	8th
BARROW-IN-FURNESS (—).. W. S. Whitworth	29·539	40·40	50·00	27th	27·00	22nd	3·730	21	0·720	26th
LIVERPOOL (BIDSTON) (—) J. Hartnup, jun.	29·573	42·50	59·00	24th	28·00	21st	2·360	20	0·320	23rd
CENTRAL HILL REG.: NEWTON-REIGNY (Penrith) (577ft.) T.G. Benn, F.M.S.	29·549	38·50	51·00	25th	18·00	20th	4·22	24	0·730	8th
HAWES JUNCTION (1,135 ft.) Station-master	*28·329	36·40	51 00	24th	16·00	19th	7·74	24	1·180	8th
STONYHURST (381 ft.)..... Rev. S. J. Perry, F.R.S.	29·195	46·60	56·90	24th	19·10	20th	3·079	22	0·510	23rd
EASTERN LOWLAND REGION: NORTH SHIELDS (—) . .. J. W. Irvine	29·530	40·90	56 00	24th	26·00	19th 20th	0·790	14	0·400	8th
SCARBOROUGH (120 ft.) .... Allan Rowntree, F.M.S.	29·606	41·89	55·70	24th	30·00	19th	1·540	18	0·470	4th
YORK MUSEUM (—) ..... The Curator	29·602	41·50	57·00	24th	20·00	19th	1·690	21	0·230	16th
MOORTOWN, LEEDS (500 ft.) G. Paul, F.G.S., F.M.S.	29·605	40·27	49·50	24th	25·30	18th	2·470	23	0·380	16th
BARNSLEY (350 ft.) ..... M. T. Sadler, M.D.	—	—	54·00	29th	24·00	22nd	1·290	17	0·330	28th
HULL, DERRINGHAM (10 ft.) Wm. Lawton.....	29·790	41·50	59·00	24th	22·50	21st	2·330	18	0·550	4th
SPURN POINT (—) ..... J. B. Smith	29·613	41·10	52·00	2nd	32·00	9th	1·540	17	0·270	16th
LOUTH, LINCS. (111 ft.).... T. W. Wallis.....	29·630	39·46	54·00	12th	26·00	21st	3·080	21	0·790	17th
BOSTON, LINCS. (24 ft.).... W. H. Wheeler, M.In.C.E.	29·670	40·50	56·00	24th	28·00	21st	1·730	11	0·520	16th
LOUGHBOROUGH (—) ..... W. Berridge, F.M.S.....	29·640	42·80	59·co	24th	21·00	21st	2·560	18	0·360	16th
LONDON	29·718	44·40	58·00	12th 24th	28·00	19th 21st	2·270	17	0·580	16th

* Not reduced to sea-level.

Wind.—In the 1st Division (Isle of Man) chiefly S. and S.W. In 2nd and 3rd Divisions, S.E., S., and S.W. In the 4th Division, S., S.W., and W.

Gales.—1st Division, 11 days—viz., 1st, 2nd, 3rd, 4th, 6th, 8th, 9th, 21st, 22nd, 23rd, and 24th. 2nd Division, on 4 days. 3rd Division, 2 days. 4th Division, 6 days each at Shields and Spurn, and 14 at Loughborough.

Snow.—None in Isle of Man, but in all other Divisions from the 16th to the 20th, more or less.

Bright Sunshine.—63 hours at Isle of Man, 51 hours at Silloth, 35 hours at Stonyhurst, and 35¾ at Newton Reigny.

Highest Temperature in Sun.— 102·6° at Isle of Man; 106° at Silloth; 104·5° at Stonyhurst; and 89·00° at Leeds, all on the 28th; at Newton Reigny 90·00°, on the 25th.

Naturalist,

COLEOPTERA OF THE LIVERPOOL DISTRICT.

By JOHN W. ELLIS, L.R.C.P., L.R.C.S.E.,

Liverpool; *Hon. Sec. Lancashire and Cheshire Entomological Society.*

PART V.

CLAVICORNIA.

(Read before the Lancashire and Cheshire Entomological Society, November 24th, 1884.)

The Clavicornia are so called from the antennæ in nearly all the species being terminated with a distinct knob composed of several joints (as in the genus *Meligethes*), or of a single (as in *Rhizophagus*), two, three (as in *Cryptophagus*), four, or five (*Choleva*) larger joints forming a loose but more or less distinct club. From the natural habits of many of the species, the group is often known as the *Necrophaga* (feeders on dead animal matter); but this name is only applicable to a certain, and that not large, section of the group, while a much greater number of species live in decaying vegetable matters, under bark, or revel in flowers, the bloom of the hawthorn being an especial favourite with these latter.

In Part IV. I referred to the *Brachelytra* as representing, on account of the minute size of many of the species, the Tineina among the Lepidoptera; and I may again use a like comparison between many of the Clavicornia (especially the family *Trichopterygidæ*) and the genus *Nepticula* among the Tineina, for, while there are few in the family but could fall into a moderate-sized pinhole, some are so minute as to measure (*Nephanes Titan*, *e.g.*) only the one-fourth of a line or the one-forty-eighth part of an inch in length. Like the small Brachelytra, very few collectors take the trouble to collect or set these extremely interesting 'atoms,' and many of them, probably on this account, are considered extremely scarce.

Nothwithstanding the newer and, to my mind, more scientific arrangement of the Clavicornia in the recent catalogue of British beetles by Revs. W. W. Fowler and A. Matthews, in which the group is divided and the Brachelytra intercalated between the two divisions, I have followed the arrangement of the older catalogue of Dr. Sharp, in order to avoid any collision between the already published parts of this work and what may be yet forthcoming.

I have again to thank the Rev. W. W. Fowler for his kindness in identifying and confirming scarce or doubtful species, and I have also again to acknowledge the assistance I have received in recording both species and localities from the diary of Mr. F. Archer, and from Messrs. J. H. Smedley and R. Wilding. Much more information as to our local species of this group might have been forthcoming

had it not been for the unexpected decease of our esteemed fellow worker Mr. Fred. Kinder; and unfortunately his collection contains no evidence of the localities whence the specimens were obtained.

Notwithstanding the small number of workers at this group, I have the pleasure to record 111 species as occurring in our district, being about 18 per cent. of the total 615 species recognised as British.

The initials F.A., J.H.S., R.W., and J.W.E. refer to Messrs. Archer, Smedley, and Wilding, and to myself respectively.

PSELAPHIDÆ.

BRYAXIS, Leach.

B. hæmatica, Reich.
I have a pair taken in moss at Eastham, November 1882.

TYCHUS, Leach.

T. niger, Pk.
Under bark at Bromborough (J.W.E.).

EUPLECTUS, Leach.

E. sanguineus, Aubé (**nanus,** W.C.).
A pair from under bark at Bidston (J.W.E.).

SCYDMÆNIDÆ.

SCYDMÆNUS, Latr.

S. collaris, Müll.
Tolerably common.

S. exilis, Er.
Under bark of fir, Eastham, June 1883 (J.W.E.).

S. hirticollis, Ill.
Wallasey, March 1884 (J.W.E.).

TRICHOPTERYGIDÆ.

TRICHOPTERYX, Kirby.

T. atomaria, De G.
Eastham and Spital, abundant (J.W.E.).

T. fascicularis, Herbst.
Prenton, on the damp edge of a pond in April 1883 (J.W.E.).

T. grandicollis, Mann.
Abundant under dung near Spital, August 1884 (J.W.E.).

T. bovina, Mots.
A few specimens with the preceding species.

PTENIDIUM, Er.

P. punctatum, Gyll.
Abundant on Bidston Marsh, September 1884 (J.W.E.).

P. nitidum, Heer (**pusillum,** Sh. Cat.).
Liscard (J.W.E.).

P. formicetorum, Kr.
Abundant about West Derby, and I have taken a number of a dark form of this species not hitherto noticed (returned to me as such by the Rev. W. W. Fowler) at Prenton, where it was abundant in April 1883.

P. evanescens, Marsh. (**apicale,** Er.).
Abundant.

ANISOTOMIDÆ.

AGATHIDIUM, Ill.

A. varians, Beck.
Wallasey, a single specimen in March 1884 (J.W.E.).

A. rotundatum, Gyll.
A specimen from Wallasey, taken in April 1884 (J.W.E.).

A. marginatum, Sturm.
I took a specimen of this scarce species at Wallasey, last March (J.W.E.).

LIODES, Latr.

L. humeralis, Fab.
A single specimen at Crosby (R.W.).

ANISOTOMA, Ill.

A. dubia, Kug.
New Brighton (F.A.); one specimen, locality uncertain (J.W.E.).

A. calcarata, Er.
Tolerably common.

SILPHIDÆ.

COLON, Herbst.

C. latum, Kr.
A single specimen in moss at Eastham (J.W.E.).

CHOLEVA, Latr.

C. angustata, Fab.
A pair at Stourton in February 1882 (J.H.S.).

C. cisteloides, Froh.
A single specimen from West Derby (J.W.E.).
C. agilis, Ill.
Bidston Marsh and Eastham (J.W.E.).
C. fusca, Pz.
Abundant at Wallasey.
C. nigricans, Spence.
Abundant at Wallasey.
C. morio, Fab.
Wallasey (R.W.); Crosby (J.W.E.).
C. nigrita, Er.
One specimen, locality not recorded (J.W.E.).
C. tristis, Pz.
Common.
C. grandicollis, Er.
A single specimen from Spital (J.W.E.).
C. kirbyi, Spence.
Two specimens from localities not recorded, and one from the shore at Hightown (J.W.E.).
C. chrysomeloides, Pz.
Common.
C. watsoni, Spence.
A specimen from Wallasey (J.W.E.).
C. velox, Spence.
Common at Wallasey.
C. sericea, Pz.
Common.

NECROPHORUS, Fab.

N. humator, Fab.
The commonest of the genus.
N. ruspator, Er.
Bromborough (J.H.S.) and Wallasey (J.W.E.).
N. mortuorum, F.
A single specimen at Eastham (J.W.E.).
N. vespillo, L.
Common on the sandhills in carrion.

SILPHA, L.

S. littoralis, L.
Wallasey (R.W.); Aigburth shore (J.W.E.).
S. rugosa, L.
Abundant near the sea.

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Contents:

PAGE

Coleoptera of the Liverpool District—(PART V., CLAVICORNIA, concluded) .. ..241 to 246
John W. Ellis, L.N.C.P., &c.

Observations of the Arrival of Summer Visitant Birds in the North of England in 1885:—*Wm. Eagle Clarke, F.L.S., M.B.O.U., etc.* .. ..247 to 251

Bibliography of 1884 (PART III., REPTILES and AMPHIBIANS, and PART IV., FISHES) 252 to 257

Ornithological Note:— 251
Night-jar at Eccles—*J. M. Chadwick.*

Herpetological Note:— 258
The true Sand Lizard in the North of England—*W. Denison Roebuck, F.L.S.*

Ichthyological Note:— 257
Ballan Wrasse at Flamborough—*Matthew Bailey.*

Conchological Notes:— 258
Conchological Notes from Settle—*Rev. W. C. Hey, M.A.*

Entomological Notes:— 246
Hymenoptera near York—*Thomas Wilson*; Abia sericea in Wensleydale—*W. Denison Roebuck, F.L.S.*; Lepidoptera near Ilkley—*Charles Smethurst*; Lycæna corydon in the North of England—*J. B. Hodgkinson.*

Note on Freshwater Polyzoa:— 262
Paludicella ehrenbergi near Chester—*Thomas Shepheard, F.R.M.S.*

Botanical Notes:— 259
Solomon's Seal in Westmoreland—*J. B. Hodgkinson*; Wensleydale Botany, erratum and additions—*F. Arnold Lees.*

Cryptogamic Notes:— 259
Manchester Cryptogamic Society; Freshwater Algæ near Dewsbury—*C. P. Hobkirk, F.L.S.*

Palæontological Note:— 258
Inoceramus involutus at Ganton Wold—*S. Chadwick.*

Yorkshire and Nottinghamshire Naturalists at Anston Stones.. .. .. ..260 to 262

Book Notice:— 263
Calvert's Notes on the Geology and Natural History of County Durham.

Notes and News 263

Meteorological Returns for March 1885—(Edited by *Geo. Paul, F.G.S., F.R.Met.S.*) .. 264

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Advertisements.—Scale of charges may be had on application.

BOOKS RECEIVED.

Haldeman and Tryon's Monograph of the Freshwater Univalve Mollusca of the United States—10 parts. [Philadelphia Academy of Nat. Science.
*The Salmonidæ of Westmoreland—G. F. Braithwaite [Atkinson and Pollitt.
*Nottingham Naturalists' Society—32nd Annual Report, for 1884. [Society.
Catalogue of Vertebrate Fossils from the Siwaliks of India—R. Lydekker, B.A., &c. [Royal Dublin Society.
On the Origin of Freshwater Faunas—W. J. Sollas, D.Sc., &c. [Roy. Dub. Soc.
Memoirs on Hawaiian Coleoptera—Rev. T. Blackburn & Dr. D. Sharp [R. D. S.
Royal Dublin Society—Scientific Proceedings, Parts 5 and 6. [Society.
New York Microscopical Society—Journal, April, 1885. [Society.
Philadelphia Academy of Nat. Sciences—Pro. 1884, pt. II., 1885, pt. I. [Academy.
Canadian Science Monthly, March 1885. [Editor.
*The Manx Note Book, No. 2, April 1885. [A. W. Moore, Editor.
*Journal of Conchology for April 1885. [J. W. Taylor, Editor.
Midland Naturalist for May 1885. [The Editors.
The Young Naturalist for May 1885. [J. E. Robson, Editor.
*The Naturalist's World for May 1885. [P. Lund, Editor.
*Natural History Journal for May 1885. [J. E. Clark, Editor.
Illustrated Science Monthly for May 1885. [Bogue, Publisher.
*Science Gossip for May 1885. [Chatto and Windus, Publishers.

Memoirs marked * will be noticed in our Annual Bibliography of the Literature of the Physical Features and Natural History of the North of England.

EXCHANGES.

Notices of Exchange inserted free of charge to Subscribers.

Migration Reports.—Wanted, Migration Reports for 1879, and 1881, published in 1880, 1882.—Rev H. A. Macpherson, Carlisle.

Fossils.—Duplicates: Fossils from the Shell bed, Millstone grit. Wanted, Micro Slides.—James Ingleby, Eavestone, Ripon.

Shells and Fossils.—Fine collection, Foreign and British Shells, 750 species; also collection of Rocks and Fossils of most formations, 1,500 specimens, some duplicates: wanted good Binocular Microscope.—C. T. Musson, 23, Mapperley Hill, Nottingham.

Scottish and Irish Slugs.—Wanted from every county, to be sent alive in air-tight box, also from many English counties. They are required for the study of variation and distribution, and the commonest species are required.—Wm. Denison Roebuck, Sunny Bank, Leeds.

The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, etc., is **John Eggleston, Park Place, Sunderland.** Lists free.

S. sinuata, Fab.
Abundant near the sea.

S. tristis, Ill.
Crosby, May 1862 (F.A.).

S. atrata, L.
Crosby, a single specimen (R.W.).

HISTERIDÆ.

HISTER, L.

H. cadaverinus, E.H.
Abundant.

H. unicolor, L.
Wallasey (R.W., J.W.E.); Eastham (R.W.).

H. carbonarius, E.H.
Two specimens at Bromborough in June 1879 (J.W.E.).

H. purpurascens, Herbst.
A single specimen from Wallasey (R.W.).

H. stercorarius, E.H.
I have a specimen taken by Mr. E. R. Curzon in the district, but I am not aware of the exact locality.

H. 12-striatus, Schr.
A specimen at Hightown in April 1882 (J.H.S.) and one from Wallasey (R.W.).

H bimaculatus, L.
Wallasey (J.H.S., R.W.). I believe the late F. Kinder used to take this species frequently, in dung, about Kirkdale.

SAPRINUS, Er.

S. nitidulus, Pk.
Common on the sandhills.

S. æneus. Fab.
Abundant on the sandhills.

S. immundus, Gyll.
Southport, May 1882 (B. Cooke).

S. quadristriatus, E.H.
Common on the sandhills.

S. maritimus, Steph.
I took several specimens of this species on the shore at Crosby, in a dead rabbit, in the spring of 1875, but have failed to find any since.

ONTHOPHILUS, Leach.

O. striatus, Fab.
Abundant in dung on the Wallasey sandhills, but difficult to distinguish from small seeds.

NITIDULIDÆ.

BRACHYPTERUS, Kug.

B. pubescens. Er.

B. urticæ, Fab.

Both species are very abundant on nettles during the summer.

EPURÆA, Er.

E. æstiva, L.

Very abundant on hawthorn blossom.

E. angustula, Er.

A very scarce species, of which I possess a specimen which I took under bark at Eastham, in February 1883.

E. florea, Er.

I have a specimen I took among **E. æstiva,** but the locality was not noted.

NITIDULA, Fab.

N. bipustulata, L.

One specimen taken in a dead gull on the shore at Aigburth (J.W.E.).

SORONIA, Er.

S. punctatissima, Ill.

A specimen taken on the Aigburth shore, in June 1875 (J.W.E.).

OMOSITA, Erich.

O. colon, L.

O. discoidea, Fab.

Both species common in dead animals.

MELIGETHES, Steph.

M. rufipes, Gyll.

Abundant on hawthorn blossom.

M. æneus, Fab.

Abundant on hawthorn blossom.

M. viridescens, Fab.

Rock Ferry (F.A.); common at Wallasey, on hawthorn bloom (J.W.E.).

M. brunnicornis, Sturm.

Taken occasionally by sweeping.

M. picipes, Sturm.

Commonly taken by sweeping.

BYTURUS, Latr.

B. sambuci, Scop.

Mr. Archer records this species from the flowers of *Caltha palustris* (Marsh Marigold) at Rock Ferry.

B. tomentosus, Fab.

Abundant on brambles.

RHIZOPHAGUS, Herbst.

R. depressus, Fab.

Under fir bark, Bidston, in March 1883 (J.W.E.).

R. dispar, Pk.

Eastham, under oak bark (J.H.S., J.W.E.).

R. bipustulatus, Fab.

Abundant under bark of oak at Eastham, in autumn and winter.

COLYDIIDÆ.

SARROTRIUM, Ill.

S. clavicorne, L.

This exotic-looking species is occasionally found crawling on the bare sandhills at Crosby and Hightown. So far as I am aware it has not been taken at Wallasey.

CRYPTOPHAGIDÆ.

TELMATOPHILUS, Heer.

T. caricis, Ol.

Bidston Marsh and Spital (J.W.E.).

CRYPTOPHAGUS, Herbst.

C. lycoperdi, Hbst.

Abundant in puff-ball fungi, in Eastham wood.

C. pilosus, Gyll.

Bidston and West Derby (J.W.E.).

The variety **punctipennis**, Bris., also at Bidston (J.W.E.).

C. scanicus, L.

Bidston Hill (J.W.E.).

C. cellaris, Scop.

Wallasey (J.W.E.).

C. acutangulus, Gyll.

One specimen taken in the district, but the locality not noted (J.W.E.).

C. dentatus, Herbst.

Eastham and Liscard (J.W.E.).

C. distinguendus, Sturm.
Bidston and Wallasey (J.W.E.).

C. vini, Pz.
Very abundant on furze at Bidston and Prenton in spring.

C. pubescens, Sturm.
I have taken a single specimen of this scarce species at New Ferry.

PARAMECOSOMA, Curt.

P. melanocephala, Hbst.
Spital (J.W.E.).

ATOMARIA, Steph.

A. fuscipes, Gyll.
Wallasey (J.W.E.).

A. pusilla, Pk.
Wallasey (J.W.E.).

A. atricapilla, Steph.
Common, and generally distributed.

A. ruficornis, Marsh.
I have a pair of this scarce species, taken at Spital (J.W.E.).

EPHISTEMUS, Steph.

E. gyrinoides, Marsh.
Frequent in moss.

LATHRIDIIDÆ.

MONOTOMA, Herbst.

M. brevicollis, Aubé.
I took a single specimen of this scarce species at Wallasey, in March last.

LATHRIDIUS, Herbst.

L. lardarius, De G.
Southport (B. Cooke); Spital (J.W.E.).

L. transversus, Ol.
Common.

L. minutus, L.
Common.

L. nodifer, West.
Abundant on the sandhills, in traps set for Cholevæ.

CORTICARIA, Marsh.

C. crenulata, Gyll.
West Derby and Wallasey (J.W.E.).

C. denticulata, Gyll.

I took a specimen of this species, which flew on to a book I was reading, in one of the Liverpool streets. Also at Prenton (J.W.E.).

C. fulva, Chev.

Eastham, West Derby, and Wallasey (J.W.E.).

MYCETOPHAGIDÆ.

TYPHÆA, Curtis.

T. fumata, L.

I have frequently taken this species flying in the Liverpool streets, and crawling up windows.

DERMESTIDÆ.

DERMESTES, L.

D. vulpinus, Fab.

Wallasey (R.W.).

D. murinus, L.

One at Crosby (R.W.).

D. lardarius, L.

Abundant in provision warehouses and cellars.

BYRRHIDÆ.

BYRRHUS, L.

B. pilula, L.

Common on dusty roads in spring and early summer.

CYTILUS, Er.

C. varius, Fab.

Stanley Park (R.W.); Bidston Marsh (F.A.); abundant on the Wallasey sandhills in March 1884, and occasionally round West Derby (J.W.E.).

SIMPLOCARIA, Marsh.

S. semistriata, Ill.

West Derby and Wallasey, common (R.W., J.W.E.).

GEORYSSIDÆ.

GEORYSSUS, Latr.

G. pygmæus, Fab.

In a shallow pool at Crosby, September 1862 (F.A.).

PARNIDÆ.

PARNUS, Fab.

P. auriculatus, Ill.

Very abundant on the sandhills at Hightown and Crosby, and under stones behind the Leasowe embankment.

HETEROCERIDÆ.

HETEROCERUS, Fab.

H. marginatus, Fab.

A single specimen taken on the bank of the Alt at Hightown in April 1882 (J.H.S.).

ENTOMOLOGICAL NOTES.

Hymenoptera near York.—In my paper on Hymenoptera an asterisk is prefixed to *Abia nitens* Thoms. This insect is, however, not new to Yorkshire, but is the same as *sericea* L.; Mr. Cameron named it for me as *nitens*. *Tenthredo sordida* should be *Tenthredopsis sordida*. In Mr. Cameron's catalogue of British Tenthredinidæ, this species is given as a synonym of *T. nassata*, but I believe them to be distinct species. Of *T. sordida* I have taken both male and female together from hawthorn hedges, the females being in the proportion of two to one male. All the females of *T. sordida* are yellow, and the males are slender, dark brown, almost black, the abdomen bordered irregularly with paler brown. On the other hand, the males of *Tenthredopsis nassata* are yellow and are larger insects altogether, whilst the females are unknown to me. I have taken five males and they are all constant in markings.—Thos. Wilson, Holgate, York, February 10th, 1885.

Abia sericea L. in Wensleydale.—On the 9th of August the Rev. G. P. Harris, M.A., sent me a specimen of the pretty larva of this sawfly, which he had found feeding on scabious near Hawes, for the name of which I am indebted to Mr. E. A. Fitch.—Wm. Denison Roebuck, Sunny Bank, Leeds, August 18th, 1884.

Lepidoptera near Ilkley.—My captures in the neighbourhood of Ilkley during the past season have included the following:—*Plusia interrogationis*, a very fine example, taken on Ilkley Moor, which is, I believe, the first recorded for the district; *Epunda viminalis*, bred from larvæ taken on sallows in Middelton Wood; *Xanthia cerago* and *X. silago*, both abundant as larvæ on sallow catkins, at Addingham; *Cidaria fulvata* and *C. pyraliata*, taken both at Ilkley and at Middelton; and *Cynthia cardui*, which I saw lately in one of the Ilkley streets.—Charles Smethurst, Leeds, August 20th, 1884.

Lycæna corydon in the North of England.—Your note on p. 183 of the *Naturalist* for March, reads that this butterfly does not occur in Yorkshire. Some twenty years ago a man from Settle had at an inn here (Preston) a museum, in which he had 'pictures' made of the Chalk-hill Blue (*L. corydon*). He told me that they were in profusion about or near Settle and Bentham, some twenty miles from Lancaster. The species till lately existed under Warton Crags near Carnforth, ground that I go over at all times of the year. Where *Thecla quercûs* and *L. corydon* used to swarm, not one has been seen for years. I may add that there is plenty of scope for entomological investigation on the east side of the London and North Western Railway, from Preston to (say) Tebay, many miles of which has never been looked up by entomologists.—J. B. Hodgkinson, Preston, March 1st, 1885.

[We print this note for what it may be considered worth by entomologists, and because Mr. Hodgkinson's observations on the occurrence of the species at Warton Crags tend to confirm the records given in previous numbers of this journal by Dr. Ellis and Mr. H. Goss. But we should be inclined to enter a verdict of 'not proven' in respect of the Yorkshire record; it is vague, and offers so much room for reasonable doubt. It is particularly worthy of remark that there should be no confirmation from other sources of the occurrence of a day-flying insect which is so conspicuous on the wing as is *L. corydon*.—Eds.]

OBSERVATIONS OF THE ARRIVAL OF SUMMER VISITANT BIRDS IN THE NORTH OF ENGLAND IN 1885.

By WM. EAGLE CLARKE, F.L.S., &c.

The following compilation giving the dates on which the Summer Visitant birds were first noted in the northern counties of England may interest some of the readers of this journal. Though no scientific value can be claimed for such a collation, since the opportunity of noting the arrival, or even observing a species within some hours of its advent, can only fall to the lot of but a few peculiarly-situated and zealous naturalists; yet this much may be claimed for it, that a fair idea is given of the approximate date of arrival of most species.

Observations from the coast districts have, in some cases, an enhanced value, for many of the species noted in such localities only frequent them for a very short period during passage, soon to pass inland to some favoured nesting habitat, or when returning, *en route* for more genial winter-quarters.

I have inserted for comparison, where obtainable, the dates of arrival, or rather of first observation, for the south of England, when earlier than those for the north.

The zoological sequence and nomenclature adopted is that of the List of British Birds, compiled by a committee of the British Ornithologists' Union.

Ring Ouzel (**Turdus torquatus**). March 21st, Nidderdale (W. Storey); 24th, Sedbergh, Yorkshire (H. Kerr); April 2nd, Stacksteads, Lancashire (H. Kerr); 3rd, Rotherham (E. W. West) and Baildon Moor, Yorkshire (J. Firth); 5th, Nottingham (F. B. Whitlock); 6th, Skipton (C. C. Smith); and 14th, Spurn Head (P. W. Lawton).

Wheatear (**Saxicola œnanthe**). March 20th, Mansfield, Notts. (J. Whitaker); 22nd, near Bradford (W. Illingworth); 23rd, Nidderdale (W. Storey) and Greetland, near Halifax (C. C. Hanson); 24th, Sedbergh (H. Kerr); 25th, Barnsley (T. Lister); 27th, Cawthorne, near Barnsley, female (T. Lister); 28th, Langsett Moors, near Penistone, male (T. Lister); April 1st, Rotherham (E. W. West) and Stacksteads, Lancashire (H. Kerr); 2nd, Skipton (C. C. Smith); 3rd, Carlisle (T. Duckworth); 5th, Nottingham (F. B. Whitlock) and Flamborough Head (M. Bailey).

April 13th, Bahama Bank Light-vessel, off E. coast of Isle of Man, fifty-two 'Stonechatters' at lantern at 11.30 p.m.; twelve killed, forty caught alive. Wind S. by E., fresh; misty (J. West).

Whinchat (**Pratincola rubetra**). April 20th, Beverley (J. C. Swailes); 23rd, Harrogate (P. Inchbald) and Bradford; 25th, Rotherham (E. W. West); 26th, Masham (T. Carter), and Mansfield, Notts. (J. Whitaker); 28th, Nidderdale (W. Storey) and Barnsley (T. Lister); May 1st, Nottingham (F. B. Whitlock); 7th, Brough, Yorkshire (L. H. West).

Redstart (**Ruticilla phœnicurus**). April 19th, Harrogate (P. Inchbald); 20th, near Leeds (W. C. Scott); 21st, Ryeburne Valley, near Halifax (F. G. S. Rawson), Rotherham (E. W. West), and Masham (T. Carter); 23rd, Nidderdale (W. Storey) and Barnsley (T. Lister); 24th, Flamborough Head (M. Bailey); 25th, Walton Hall (E. P. P. Butterfield) and Nottingham (F. B. Whitlock); 27th, Carlisle (T. Duckworth); 28th, near Ripon (J. Ingleby); 30th, North Stainley near Ripon (Rev. R. A. Summerfield).

An earlier date, North Oxfordshire, April 18th (O. V. Aplin).

Nightingale (**Daulias luscinia**). April 16th, Bourne, S. Lincolnshire (J. F. Bacon); 19th, Nottingham (F. B. Whitlock); 23rd, Harrogate (P. Inchbald); 29th, Barnsley (T. Lister).

The Bourne record is the earliest noted this season for any part of England.

Whitethroat (**Sylvia cinerea**). April 17th, Barnsley (T. Lister); 22nd, Nottingham (F. B. Whitlock); 23rd, Carlisle (T. Duckworth); 25th, Nidderdale (W. Storey); 27th, Harrogate (P. Inchbald), and Beverley (J. C. Swailes); 29th, Masham (T. Carter).

Lesser Whitethroat (**Sylvia curruca**). April 19th, arrived at Flamborough Head (M. Bailey), and Beverley (J. C. Swailes); 22nd, Rotherham (E. W. West); 22nd, Harrogate (P. Inchbald); 26th, Masham (T. Carter); May 3rd, Nottingham (F. B. Whitlock).

Blackcap (**Sylvia atricapilla**). April 11th, Barnsley (T. Lister); 19th, Nottingham (F. B. Whitlock); 24th, Harrogate (P. Inchbald) and Masham (T. Carter).

Garden Warbler (**Sylvia hortensis**). April 15th, Barnsley (T. Lister); 25th, Nottingham (F. B. Whitlock); 28th, Masham (T. Carter), and Beverley (J. C. Swailes).

Chiff-Chaff (**Phylloscopus rufus**). March 31st, Nottingham (F. B. Whitlock) and Harrogate (P. Inchbald); April 2nd, Carlisle (T. Duckworth); April 3rd, Masham (T. Carter); 6th, Flimby, Maryport (W. Hodgson); 13th, Rotherham (E. W. West); 16th, Harrogate (P. Inchbald); 19th, Barnsley (T. Lister) and Beverley (J. C. Swailes).

Earliest record for south of England, March 18th, Avonturn, near Salisbury (A. L. Morley).

Willow Warbler (**Phylloscopus trochilus**). April 14th, Stack-

steads, Lancashire (H. Kerr); 16th, Rotherham (E. W. West) and Harrogate (P. Inchbald); 17th, Barnsley (T. Lister), Brough (L. H. West), Nottingham (F. B. Whitlock), and Beverley (J. C. Swailes); 18th, Masham (T. Carter) and Leeds (W. C, Scott); 19th, Ryburne Valley, near Halifax (F. G. S. Rawson). Elland, near Halifax (C. C. Hanson), Carlisle (T. Duckworth), and Wilsden, near Bingley (E. P. P. Butterfield); 20th, Luddendenfoot, near Halifax (F. D. Clayton); 26th, North Stainley, near Ripon (Rev. R. A. Summerfield).

Wood Warbler (**Phylloscopus sibilatrix**). April 22nd, Mansfield, Notts. (J. Whitaker); 26th, Shipley, Yorkshire; 27th, Harrogate (P. Inchbald) and Carlisle (T. Duckworth); 28th, Nottingham (F. B. Whitlock): 29th, Masham (T. Carter) and Nidderdale (W. Storey).

Reed Warbler (**Acrocephalus streperus**). May 3rd, Nottingham (F. B. Whitlock).

Sedge Warbler (**Acrocephalus phragmitis**). April 25th, Nottingham (F. B. Whitlock) and Harrogate (P. Inchbald); 27th, Nidderdale (W. Storey) and Masham (T. Carter); 28th, Rotherham (E. W. West) and Barnsley (T. Lister).

Earliest record for south of England, April 18th, Aronturn, near Salisbury (A. L. Morley).

Grasshopper Warbler (**Locustella nævia**). April 21st, Harrogate (P. Inchbald); 29th, Barnsley (T. Lister); 30th, Whitwell Wood, South Yorkshire (W.E.C.); May 2nd, Masham (T. Carter); 5th, Mansfield, Notts. (J. Whitaker).

Yellow Wagtail (**Motacilla raii**). April 13th, Nottingham, one (F. B. Whitlock); 14th, Greetland, near Halifax (C. C. Hanson); 17th, Nottingham, common (F. B. Whitlock), and Barnsley (T. Lister); 18th, Leeds (W.E.C.), and Ryburne Valley, near Halifax (F. G. S. Rawson); 19th, North Cheshire (T. A. Coward), Beverley (J. C. Swailes), and Luddendenfoot (F. D. Clayton); 21st, Masham (T. Carter), and Rotherham (E. W. West); 25th, Nidderdale (W. Storey).

Tree Pipit (**Anthus trivialis**). April 17th, Beverley (J. C. Swailes), and Nottingham (F. B. Whitlock); 18th, Harrogate (P. Inchbald); 19th, Carlisle (T. Duckworth); 21st, Masham (T. Carter); 23rd, Barnsley (T. Lister); 25th, Nidderdale (W. Storey).

Spotted Flycatcher (**Muscicapa grisola**). April 18th, Leeds (H. K. Horsfield); 27th, Barnsley (T. Lister); May 1st, Beverley (J. C. Swailes); 2nd, near Halifax (F. G. S. Rawson); 9th, Masham (T. Carter).

Pied Flycatcher (**Muscicapa atricapilla**). May 3rd, Spurn Head (P. W. Lawton), Masham (T. Carter), and Barnsley (T.

Lister); 4th, Flamborough Head, several (M. Bailey); 5th, North Cheshire (T. A. Coward); 6th, Spurn Head (P. W. Lawton).*

Swallow (**Hirundo rustica**). April 13th, Nottingham, one (F. B. Whitlock); 14th, Barnsley (T. Lister); 15th, Bourne, Lincolnshire (J. F. Bacon); Wakefield (E. B. Wrigglesworth) and Tadcaster, Yorkshire (B. B. Thompson); 16th, Alford, Lincolnshire (J. E. Mason) and Rotherham (E. W. West); 17th, Mansfield, Notts. (J. Whitaker), Harrogate (P. Inchbald), Nidderdale (W. Storey), Ryburne Valley, near Halifax (F. G. S. Rawson), Spurn Head (P. W. Lawton), Beverley (J. C. Swailes), Leeds (W. C. Scott), and Wensleydale (J. A. Erskine-Stuart); 18th, first seen at Flamborough Head (M. Bailey); near Ripon (J. Ingleby) and several near Ripley (C. E. Avignon); 19th, Cottingley, Yorkshire, and Carlisle (T. Duckworth); 20th, North of Solway, one (J. J. Armistead); 21st, Luddendenfoot (F. D. Clayton); 23rd, Brough, Yorkshire (L. H. West); 25th, North Cheshire (T. A. Coward); 26th, North Stainley, near Ripon (Rev. R. A. Summerfield).

Earliest record for south of England, April 2nd, Bath (H. F. Maitland) and Williton (T. Cridland).

Martin (**Chelidon urbica**). April 3rd, Nottingham, one (F. B. Whitlock); 5th, Barnsley (T. Lister); 16th, near Leeds (W. C. Scott); 17th, Nottingham, common (F. B. Whitlock); 18th, North Cheshire (T. A. Coward); 19th, North Stainley, near Ripon (Rev. R. A. Summerfield); 21st, Ryburne Valley, near Halifax (F. G. S. Rawson), Masham (T. Carter), and Nidderdale (W. Storey); 22nd, Carlisle (T. Duckworth) and Mansfield, Notts. (J. Whitaker); 28th, Wilsden, Yorkshire (E. P. P. Butterfield) and near Ripon (J. Ingleby); May 1st, Brough, Yorkshire (L. H. West).

Earliest record for south of England, March 24th, Avonturn, near Salisbury (A. L. Morley).

Sand Martin (**Cotile riparia**). April 5th, Carlisle (T. Duckworth); 15th, Wakefield (E. B. Wrigglesworth); 16th, Rotherham (E. W. West) and Tadcaster, Yorkshire (B. B. Thompson); 17th, Nidderdale (W. Storey); 18th, Harrogate (P. Inchbald); 19th, Cottingley, Yorkshire; 20th, Mansfield, Notts. (J. Whitaker) and Barnsley (T. Lister); 21st, Ryburne Valley, near Halifax (F. G. S. Rawson); 23rd, Nottingham (F. B. Whitlock) and North Cheshire (T. A. Coward).

Earliest record for south of England, April 2nd, Bath (H. F. Maitland).

*Mr. Lawton states that this species has been more numerous than he ever before knew it. Mr. Coward would be glad to know if it is of regular occurrence in North Cheshire, and if it breeds; he never before observed it in the district.

Swift (**Cypselus apus**). April 26th, Flamborough Head, where Mr. Bailey says he never remembers them so early; 27th, Tadcaster, Yorkshire (B. B. Thompson); 28th, Nottingham (F. B. Whitlock); 30th, Shireoaks, Notts. (J. Whitaker), and Masham (T. Carter); May 1st, Barnsley (T. Lister).

An earlier record, April 25th, Welshpool (T.).

Cuckoo (**Cuculus canorus**). April 17th, Flamborough Head (M. Bailey); 18th, Spurn Head (P. Lawton), Luddendenfoot (F. D. Clayton), and Carlisle (T. Duckworth); 19th, Ripley, Yorkshire (C. E. Avignon) and Barnsley (T. Lister); 20th, Wakefield (E. B. Wrigglesworth); 21st, Rotherham (E. W. West); 22nd, Bourne, Lincolnshire (J. F. Bacon); 23rd, North Cheshire (T. A. Coward); 24th, Harrogate (P. Inchbald) and Beverley (J. C. Swailes); 25th, Halifax (C. C. Hanson) and near Ripon (J. Ingleby); 26th, Nottingham (F. B. Whitlock) and Wilsden, Yorkshire (J. Hey); 27th, Masham (T. Carter); 28th, Brough (L. H. West) and near Halifax (F. G. S. Rawson); 29th, North Stainley, near Ripon (Rev. R. A. Summerfield).

Earliest record for south of England, April 10th, Modbury, South Devon (G.C.G.).

Turtle Dove (**Turtur communis**). April 30th, Shireoaks (J. Whitaker).

Landrail (**Crex pratensis**). April 20th, Barnsley (T. Lister); 21st, Nottingham (F. B. Whitlock); 25th, North Cheshire (T. A. Coward); 27th, Tadcaster (B. B. Thompson); 28th, Masham (T. Carter); 29th, Nidderdale (W. Storey); May 1st, Beverley (J. C. Swailes).

Earliest record for south of England, April 16th, Alton St. Pancras, near Dorchester (R. E. Saunders).

Sandpiper (**Tringoides hypoleucos**). April 16th, Masham (T. Carter); 18th, Nidderdale (W. Storey); 23rd, Nottingham (F. B. Whitlock); 24th, Carlisle (T. Duckworth); 27th, Beverley (J. C. Swailes) and Tadcaster, Yorkshire (B. B. Thompson); 29th, North Cheshire (T. A. Coward); May 8th, near Halifax (F. G. S. Rawson).

Lesser Tern (**Sterna minuta**). April 15th, Spurn Head (P. W. Lawton).

ORNITHOLOGICAL NOTE.

Night-jar at Eccles.—As I was walking home from Manchester, and had got into Eccles close to the railway, I noticed a bird fly over me. I thought I knew the flight, and saw it directly afterwards against the sky. It turned out to be a Night-jar. I think the locality, in the centre of a noisy town, rather an unusual place for a bird of this species to be feeding in.—JAMES M. CHADWICK, Eccles, near Manchester, September 9th, 1884.

BIBLIOGRAPHY OF 1884:

Papers and records published during the year with respect to the natural history and physical features of the North of England.

PART III.—REPTILES AND AMPHIBIANS.

ANONYMOUS (no signature).

Whitby, Feb. 23rd. Nat. Hist. Journ., March 15th, viii. 40. **Yorkshire.**

Frog [*Rana temporaria*] spawn abundant and fairly developed.

BRADFORD NATURALISTS' SOCIETY.

Diary of Natural History Observations for 1884. 28 pp. **Yorkshire.**

Notes on reptiles observed in various localities, especially in West Yorkshire.

W. D. BRAITHWAITE. **Yorkshire.**

Catching a Viper [*Vipera berus*]. Nat. Hist. Journ., October 15th, viii. 139.

Occurrence of Vipers in Went Vale, and on Strensall Common, Yorkshire.

ROBERT CALVERT. **Durham.**

Notes on the Geology and Natural History of the County of Durham. 1884. Chapter XI., Reptiles; pp. 136-138.

The Viper [*Vipera berus*], the Ringed Snake [*Tropidonotus natrix*], the Blindworm [*Anguis fragilis*], the Sand Lizard [*Lacerta vivipara*], the Frog [*Rana temporaria*], the Toad [*Bufo vulgaris*], the Great Newt [*Triton cristatus*], and the Common Newt [*T. tæniatus*], constitute the reptile-fauna of Co. Durham.

S. L. MOSLEY.

A Visit to York. Young Nat., January, v. 39-41. **Yorkshire.**

Viper [*Vipera berus*] and Blindworm [*Anguis fragilis*] captured on Strensall Common.

A. M. NORMAN. **Northumberland.**

Address to . . the Tyneside Naturalists' Field Club, . . May 27th, 1881. N. H. Trans. Northumb., Durham, and Newcastle, viii. 68 (1884).

At Corbridge-on-Tyne, June 6th, 1880, Vipers [*Vipera berus*] were looked for in vain in their known haunts.

G. T. PORRITT. **Lancashire.**

Northern Range of the Sand Lizard [*Lacerta agilis*]. Nat., May, ix. 178.

This species and the Natterjack Toad [*Bufo calamita*] are recorded as occurring abundantly on the sandhills at Southport, Lancashire.

W. STOREY. **Yorkshire.**

Large Slow-worm [*Anguis fragilis*]. Field, May 3rd, p. 597; Nat. World, June, p. 100.

Two—15½ in. and 9 in. long—obtained in April near Pateley Bridge, where the species is common.

YORKSHIRE NATURALISTS' UNION. **Yorkshire.**

[Report of Meeting, Roche Abbey, May 8th.] Nat., June, ix. 199.

A Viper [*Vipera berus*] about 3 ft. long, noted.

PART IV.—FISHES.

In this department of the fauna, a very considerable amount of what is written does not fall within the domain of science, but in that of sport. It is, however, difficult in many cases to draw the line, and to say what to include and what to exclude. The principle which has actuated us has been to exclude all mere angling notes, but to include everything which may be deemed to be useful in any way as indicative of the fish-fauna of the locality to which the note may relate.

ANONYMOUS (no signature). **Yorkshire.**

A Fine Ouse Salmon [*Salmo salar*]. Field, March 29th, p. 440; Land and Water, April 5th, p. 319.

The largest ever caught in the Yorkshire Ouse, was taken in the net at Acaster Fishery, March 25th, 1884; it weighed 50½ lbs., and was 50 inches long.

ANONYMOUS (no signature). **Cumberland, Westmoreland, Lancashire.**

Windermere, Coniston, and Ullswater. Field, April 19th, p. 545.

Detailed account of the fishing capabilities of the lakes and their tributary streams.

ANONYMOUS (no signature). **Yorkshire, Lincolnshire.**

Capture of Sturgeons [*Acipenser sturio*]. Land and Water, June 21st, p. 582.

One, 14½ stone. nearly 10 feet long, captured near Goole, and one, 17 stone, a little higher up the river Ouse.

ANONYMOUS (no signature).

Esk Fishery District (Yorkshire). Field, July 19th, p. 98. **Yorkshire.**

Unprecedentedly large catch of Salmon [*Salmo salar*] and Trout [*S. fario*] on July 15th.

ANONYMOUS (no signature). **Lincolnshire.**

Large Take of Roach [*Leuciscus rutilus*]. Field, August 2nd, p. 169.

In the Great Hobhole Drain at Frieston near Boston.

ANONYMOUS (no signature). **Northumberland.**

The Tweed Commissioners and the Salmon [*Salmo salar*] **Disease.** Field, September 13th, p. 381.

Report of annual meeting of the Commissioners.

ANONYMOUS (no signature). **Westmoreland, Lancashire.**

Char [*Salmo willughbii*] **Fishing in Lake Windermere.** Land and Water, September 13th, p. 270.

Report of an enquiry held at Bowness to ascertain the views of fishermen, etc., on the question of byelaws.

ANONYMOUS (no signature). **Northumberland.**

Decrease of Salmon [*Salmo salar*] **in the Tyne.** Land and Water, October 11th, p. 362.

At the meeting of the River Tyne Conservators, was reported a great decrease in the salmon fisheries, both in the sea and in the river, attributed by Inspector Harbottle to the dry weather making it impossible for the fish to ascend the river.

ANONYMOUS (no signature). **Yorkshire, Derbyshire.**

Notes on Grayling Fishing. Field, October 25th, p. 563.

Slight passing references to the Yorkshire and Derbyshire streams.

ANONYMOUS (no signature). **Yorkshire.**

Yorkshire Salmon [*Salmo salar*] **Fisheries.** Land and Water, Dec. 6th, p. 557.

Report of annual meeting of Board of Conservators; the annual report deals with the condition of the Yorkshire Salmon rivers.

ANONYMOUS ('An Old Trent Fisherman'). **Derbyshire, Notts.**

Recollections of the River Trent. Field, January 12th, p. 49.

Pike [*Esox lucius*], Perch [*Perca fluviatilis*], Eel [*Anguilla vulgaris*], Dace [*Leuciscus vulgaris*], Roach [*L. rutilus*], Minnow [*L. phoxinus*], Chub [*L. cephalus*], Barbel [*Barbus vulgaris*], Bleak [*Alburnus lucidus*], Gudgeon [*Gobio fluviatilis*], Grayling [*Thymallus vulgaris*], and Trout [*Salmo fario*], are noticed.

The recollections, dating for 45 years back, deal with the former abundance, and present scarcity or absence of the various species.

ANONYMOUS (NOVOCASTRIAN). **Northumberland.**

Salmon [*Salmo salar*] **in the Tyne.** Field, February 23rd, p. 258.

ANONYMOUS (RED SPINNER).

In the Derbyshire Dales. Field, September 13th, p. 380.

Long account of fishing for Trout (*Salmo fario*].

ANONYMOUS (TENCER).

Trent Sturgeon [*Acipenser sturio*]. Field, June 14th, p. 818. **Notts.**

A fine one, captured June 10th, at Muckham near Newark, in the salmon nets, weighed 16 stone, and was 8 feet long.

M. B[AILEY]. **Yorkshire.**

Ribbon Fish [*Regalecus banksii*] **at Flamborough.** Land and Water, February 23rd, p. 175.

Found February 18th, alive, amongst the rocks; its length was 13 feet 3 inches, breadth 16 inches, thickness about 5½ inches.

BRADFORD NATURALISTS' SOCIETY.

Diary of Natural History Observations for 1884. pp. 28. **Yorkshire.**

Notes on fishes observed near Bradford and in other parts of Yorkshire.

WILLIAM BRADLEY. **Derbyshire, Notts.**

Takes of Salmon [*Salmo salar*]. Field, April 19th, p. 546.

Weights given of numerous Salmon taken in Trent, the largest being 32 lb.

GEO. FOSTER BRAITHWAITE. **Westmoreland.**

The Salmonidæ of Westmoreland, Angling Reminiscences, and Leaves from an Angler's Note Book. London: Hamilton Adams and Co. Kendal: printed by Atkinson and Pollitt, 1884.

The bulk of this work consists of angling reminiscences, the matter relating to the natural history of the Salmonidæ being confined to the first few chapters.

GEORGE BROOK. **Yorkshire.**

Rarities from the Yorkshire Coast. Notes from my Aquarium, 1884, p. 7.

The Dragonet (*Callionymus lyra* L.), of which the writer caught two off Redcar in comparatively shallow water—four or five fathoms.

ANDREW BROTHERSTON. **Northumberland.**

Capture of a Greenland Shark (*Læmargus borealis*). Land and Water, May 17th, p. 460.

A young specimen brought into Berwick by a trawler, April 29th. Four previous occurrences are cited.

ROBERT CALVERT. **Durham.**

Notes on the Geology and Natural History of the County of Durham. 1884. Chapter XII., Fishes; pp. 138-140.

Sixteen species of freshwater fish noted, but no marine ones are mentioned.

W. Eagle Clarke and W. Denison Roebuck. **Yorkshire.**

Notes on the Vertebrate Fauna of Yorkshire. Nat., April and May, ix. 147-151 and 167-176; Zool., May, viii. 171-184.

Seven fishes are recorded as additional to the Yorkshire fauna, and, including these, notices are given of 26 species, mostly marine.

John Cordeaux. **Yorkshire.**

Notes from the Humber in the Autumn of 1884. Field, Nov. 22nd, p. 716.

Refers incidentally to the occurrence of Herrings [*Clupea harengus*] and Sprats [*Clupea sprattus*] off the Dunlington coast.

In Upper Coquetdale. Field. August 2nd, page 152. **Northumberland.**

The Eel [*Anguilla vulgaris*], Trout [*Salmo fario*], and Salmon [*S. salar*], referred to.

Francis Day. **Northumb., Durham, Yorkshire, Lancashire.**

The Fishes of Great Britain and Ireland. Parts VIII. and IX.

The concluding parts of this exhaustive monograph deal with the subclasses *Plectognathi*, Sun-fishes, &c. (in part), *Chondropterygii*, Sturgeon, *Plagiostomata*, Sharks and Rays, and *Cyclostomata*, Lampreys. Under a majority of the species reference is made to Yorkshire, Northumberland or Durham, and there are one or two Lancashire references.

N. F. Dobrée.

Banks' Oarfish—Regalecus Banksii. Nat., April, ix. 151. **Yorkshire.**

One driven ashore on Flamborough rocks, February 1884.

Large Halibut [*Hippoglossus vulgaris*]. Nat., June, ix. 194.

One from the Dogger Bank, 6 feet 9 inches long, weighed over 20 stones.

W. G. **Yorkshire.**

The Length and Weight of Trout [*Salmo fario*]. Field, Dec. 20th, p. 860.

Uniformity of length and weight shown by statistics of 30 fish caught in Aire, up Malhamdale; these are given in a tabular form.

R. Y. Green. **Northumberland.**

Notice of Salmon Trout [*Salmo trutta*] **in Ouseburn, Newcastle-on-Tyne, in the spawning season.** Nat. Hist. Trans. Northumb., Durham, and Newcastle, viii. 184-5. 1884.

Some fish—thought from their size to be this species—noted in the Ouseburn at Benton Bridge, November 13th, 1881. It is well-known that 'Burn Trout' [*Salmo fario*] exist higher up the stream.

S. R. H[allam]. **Derbyshire.**

Late Spawning. Nat. World, May, i. 79.

Two Perch [*Perca fluviatilis*] from the Dove, full of spawn, Aug. 23rd, 1883; and three Roach [*Leuciscus rutilus*], also full of spawn, the preceding week.

William Heriot (Norham).

Voracity in a Trout [*Salmo fario*]. Field, May 31st, p. 747. **Northumberland.**

The Trout, caught in Tweed, had swallowed a fair-sized Smolt, which was half in and half out of the Trout, whose jaws were at full stretch.

Wm. Henry Hills.

Ennerdale Char Dub. Field, March 29th, p. 440. **? Cumberland.**

Notes of a visit paid by the late Dr. Leitch, of Keswick, in November, 1850, to the portion of the River Liza which bears this title, and describing the fish [*Salmo willughbii*?], which were seen there in thousands.

George Pringle Hughes. **Northumberland.**

Address delivered to the Berwickshire Naturalists' Club, at Berwick, October 10th, 1883. Proc. Berw. Nat. Club, x. 233.

Notes on the Salmon Fisheries of Tweed.

THOMAS H. HUXLEY. **Cumberland**

Close Season on the Derwent. Field, August 9th, p. 207; Land and Water, August 9th, pp. 150-151.

Lengthy report upon a recently-enacted byelaw of the Derwent Fishery District (Cumberland), extending the close season for about a fortnight, recommending its confirmation and adoption.

[T. H. HUXLEY.] **Northumberland.**

The Inspector's Report on the Salmon Fisheries of England and Wales. Land and Water, May 10th, pp. 436-7.

Reports a general increase in the takes of Salmon [*Salmo salar*] throughout the country in 1883—except in the Tyne, the most prolific river in the kingdom—and discusses the matter.

JOHN J. JACKSON.

The Whitby Salmon [*Salmo salar*] **Fishery.** Field, December 20th, p. 859.

Statistics of numbers caught in the years 1876-1884 inclusive.

L. **Yorkshire.**

Salmon [*Salmo salar*] **and the Yorkshire Derwent.** Field, Jan. 12th, p. 50.

It appears that since the lowering of the dam or weir at Old Malton the Salmon have been able to penetrate into the Rye and the Dove.

F. R. L. (Liverpool).

Grey Mullet [*Mugil*, ? species]. Field, September 13th, p. 382. **Lancashire.**

Seen in the Waterloo Dock, Liverpool, September 11th, 1884.

R. B. L. **Cumberland, Westmoreland, Lancashire.**

Our North-Country Char [*Salmo willughbii*]. Field, March 1st, p. 296.

A lengthy and interesting account of the Char of the English lake district. They are found in Windermere (where they are by far the most numerous), Coniston Water (which now holds a good supply, though 30 years ago Sir H. Davy wrote that they were scarce), Bassenthwaite Lake, Derwentwater, Hawes Water, Ennerdale, Crummock Water, Goats Water, &c. An occasional example is also now found in Ullswater, in which they had been almost exterminated by hushwater.

The Lake District. Field, May 3rd, p. 612. **Cumberland, Westmoreland.**

Long article, descriptive of fishing resorts about Kendal, Penrith, Keswick, and Seascale.

Windermere. Field, December 6th, p. 787. **Westmoreland, Lancashire.**

This lengthy article refers mostly to fishery regulations. The few observations of ichthyological interest are as follows:—Perch [*Perca fluviatilis*] abundant; Char [*Salmo willughbii*], in enormous quantities; splendid Trout [*S. fario*], in plentiful supply; Pike [*Esox lucius*], in fair quantities; Eels [*Anguilla vulgaris*]; Salmon [*Salmo salar*], a few; Salmon-trout [*S. trutta*], occasionally.

W. J. LANCASTER. **Yorkshire.**

List of Varieties of Fish found in the neighbourhood of Barnsley and ten miles round. Quart. Trans. Barnsley Nat. Soc., 1884, iv. 23-24.

The list includes sixteen forms.

R. L[OFTHOUSE?]. **Yorkshire, Durham.**

The Viviparous Blenny [*Zoarces viviparus*]. Field, February 2nd, p. 165.

Common in the estuary of the Tees. Locally called 'rock eels' and 'greenbones,' the latter from the bones being dark green when the fish is cooked.

R. LOFTHOUSE. **Yorkshire.**

Capture of an Oblong Sunfish. The Sunfish captured at Redcar. Field, September 27th, p. 451; October 25th, p. 564.

An '*Orthagoriscus oblongus*' (which afterwards proved to be *O. mola*) was shot off Redcar, September 13th. It was 3 feet 9 inches long; other dimensions are given; its weight was 9 stone.

Naturalist,

W. Macaulay and others.

Yorkshire Trout Fishing. Field, August 2nd, p. 169. **Yorkshire.**

The merits of numerous rivers and streams discussed.

John Riddell.

Snub-nosed Salmonidæ. Land and Water, June 7th, p. 534. **Northumberland.**

A Snub-nosed Salmon, 24 lb. weight, killed in Tweed, on the Lennell Haugh Water, November 13th, 1882.

J. H. Rowntree. **Yorkshire.**

Another Ribbon Fish [*Regalecus banksii*]. Nat. Hist. Journ., March 15th, viii. 40.

Caught at Flamborough; 13 feet 3 inches long; only 2 feet 8 inches girth.

Tho. Satchell.

'Wanny Blossoms.' Anglers' Note-book, August, pp. 41-44. **Northumberland.**

Review of a book with this title, written by James Armstrong, and published at Carlisle in 1876. The book describes in rhyme angling at the heads of the Northumbrian streams, Wansbeck and Reed, North Tyne and Coquet.

J. T. Sewell.

Large Fish. Nat. Hist. Journ., June 15th, viii. 100. **Yorkshire.**

Two fine Halibut [*Hippoglossus vulgaris*] weighing 12½ and 10½ stone, caught at Whitby.

C. F. S[mith] and C. A. P[arker]. **Cumberland.**

A Cumberland Marsh. Field, April 19th and May 3rd, pp. 560 and 596-7.

Trout [*Salmo fario*] occur at Drigg Common, the marsh referred to.

F. Stanton.

The Reid or Fenscale. Field, May 31st, p. 747. **Lincolnshire, Yorkshire.**

Inquiry for information as to the fish described in an old book as 'The Reid, or Fenscale, . . a very scarce fish, found only in the river Cherwell, in Oxfordshire, and in a few lakes in Lincolnshire and Yorkshire.'

Various Anonymous Writers.

Aire v. Wharfe. Field, Jan. 12th, p. 49; and Jan. 19th, p. 61. **Yorkshire.**

'Merganser' and 'L.' institute comparisons as to the Trout (*Salmo fario*) of the two rivers. It is stated that Minnows (*Leuciscus phoxinus*) are scarce in the Wharfe, the Eden, and the Yore, but very plentiful in the Aire. The waters of Kilnsey, Wharfedale, swarm with Loach (*Cobitis barbatula*) and Bullheads (*Cottus gobio*). 'Goosander' continues the discussion as to Trout, and the Editor closes it, remarking that, after all, both Aire and Wharfe Trout run small.

Yorkshire Naturalists' Union. **Yorkshire.**

[Report of Meeting at Sherburn-in-Elmete, June 2nd]. Nat., July, ix. 220.

Pike [*Esox lucius*], Roach [*Leuciscus rutilus*], and Trout [*Salmo fario*] noted.

ICHTHYOLOGICAL NOTE.

Ballan Wrasse at Flamborough.—A specimen of the Ballan Wrasse (*Labrus maculatus* Bl.) was found this morning by a fisherman on the beach at Flamborough Head, cast ashore by the heavy seas. Unfortunately, when I went to measure the Wrasse, the person that found it had cooked and eaten it; I think that its length was from 16 to 18 inches, and that it was about 14 inches round the thick part of the shoulder.—Matthew Bailey, Flamborough, April 9th, 1885.

Another Wrasse was landed here to-day, caught on the hook while fishing with long lines; its length was 18 inches, and its width round the shoulder 13 inches.—Matthew Bailey, Flamborough, April 21st, 1885.

HERPETOLOGICAL NOTE.

The true Sand Lizard in the North of England.—Judging from some remarks of mine anent the supposed 'Sand Lizards' at the Spurn and other North-of-England localities (which are certainly nothing but brightly coloured specimens of the Viviparous Lizard—*Zootoca vivipara*—so far as those I have examined are concerned), that I did not believe in the existence of the true *Lacerta agilis* so far north in Britain, my friend Mr. G. T. Porritt, F.L.S., was good enough to procure from the Southport sandhills for me a couple of fine specimens which I at once saw were unmistakably referable to that species. This was on the 19th of February, and with these two were enclosed a juvenile example, which no doubt was of the same species. Mr. Porritt tells me these lizards swarm on the sandhills at Southport, where he has frequently seen them sparkling in the sun with a glistening emerald green, and sometimes almost golden, brightness. Mr. Porritt further tells me of the occurrence of the Natterjack Toad (*Bufo calamita*) in the same locality.—Wm. Denison Roebuck, Leeds, April 11th.

CONCHOLOGICAL NOTE.

Conchological Notes from Settle.—I spent April 28th at Settle, and made a few conchological observations in that neighbourhood. In the morning I strolled towards Attermire crags, noticing *Helix rupestris* and *Clausilia rugosa* on the stone walls. On grass by the roadside were plenty of *Helix arbustorum*, varying greatly in the height of the spire. Some specimens lacked the dark band entirely. In a bed of moss I found a profusion of large *Zonites nitidulus* and a single example of *Z. radiatulus*. Under one stone I found well-defined specimens of *Helix hispida* and *H. concinna*. Such collocations are interesting as proving the distinctness of nearly allied species. In the same lane I met with two specimens of a rare variety—*Zonites alliarius* var. *viridula*. *Vitrina pellucida* and *Zua lubrica* abounded. Among the crags themselves was a perfect swarm of *Helix nemoralis*. I saw hundreds of specimens, and all exactly alike in colour—pale yellow with four dark bands. There was no *H. arbustorum* here, which surprised me, as in Switzerland it goes much higher than *H. nemoralis*. *Pupa umbilicata* and *Zonites crystallinus* abounded among the crags. In the afternoon I wandered along the foot of Giggleswick Scars: *Pupa secale* was the prevailing species here. I never saw it so abundant. A few dead specimens of *Helix ericetorum* lay scattered about. *Zonites alliarius* abounded in a copse. Near refuse heaps at Giggleswick, *Helix rufescens* swarmed—both the light and dark form. I have often noticed its predilection for such localities. *Zonites cellarius* accompanied it. In crossing the Ribble I noticed *Ancylus fluviatilis* on the stones, together with the small form of *Limnæa peregra*, common in rapid streams. I had observed both species in the morning, also, in Scaleber Beck. *Bulimus obscurus* occurred on the Castleberg.

Next day, on the road between Ingleton and Chapel-le-Dale, I saw numbers of *Clausilia rugosa* var. *dubia* and *Helix arbustorum* var. *flavescens*.—W. C. Hey, St. Olave's Vicarage, York, May 5th, 1885.

PALÆONTOLOGICAL NOTE.

Inoceramus involutus Sow. at Ganton Wold.—During one of my periodical visits to the village of Sherburn, near Scarborough, I was shown in a cottage what was seemingly a dirty flint nodule, but which proved on examination to be the cast of a shell. The cottager who gave it me had got it one day at a quarry on Ganton Wold, and made of it first a chimney ornament, and afterwards used it to set pans upon. After washing and cleaning the fossil I found that it was an exceedingly rare form of one of the characteristic fossils of our chalk formation, described by Sowerby as *Inoceramus involutus*; and considering the amount of knocking about it had undergone, it was in a very good state of preservation.—S. Chadwick, Norton, near Malton, January 6th, 1885.

Naturalist,

BOTANICAL NOTES.

Solomon's Seal in Westmoreland.—In the review of the flora of the English Lake District, I see that the Solomon's Seal (*Polygonatum multiflorum*), is accepted as a Lake District plant. This is correct; it grows about half a mile from Witherslack Hall (Hon. F. Stanley's), on the left side of the road from the Derby Arms, high up among the rocks, in an almost inaccessible place, where it is in profusion. No habitation near, nor has been. The Daffodil I have seen in plenty, in out-of-the-way places in Westmoreland.—J. B. HODGKINSON, Preston, May 1st, 1885.

Wensleydale Botany: Erratum and Additions.—In my paper in the January number of this journal, page 138, line 18 from top, I have only just discovered that '*Hieracium*' was inadvertently printed instead of *Hypericum*, which was of course the genus intended to be associated with Leers' '*dubium*.'

Already thus early I have been able to add two plants to the florula of the higher part of the dale: *Viola odorata* (clearly indigenous) is just now blooming on the dry, sheltered north bank (facing south) of the Yore, below the bridge over it leading from Askrigg to Bainbridge; whilst *Allium vineale*, the Crow Garlic, one of the species whose apparent absence was commented upon in the paper referred to, is springing up in patches in the bush-shaded sand of the west bank of the Bain stream, about a mile above Bainbridge.—F. A. LEES, Hawes, Wensleydale, April 27th, 1885.

CRYPTOGAMIC NOTES.

Manchester Cryptogamic Society.—At the September meeting Mr. James Cash exhibited several interesting mosses, *Tortula princeps*, new to the district, having been gathered in Miller's Dale, June 1878, but undetermined until quite recently; *Trichostomum flavovirens*, found last month at St. Ann's-on-the-Sea, being the first record for Lancashire. Mr. William Forster exhibited some varieties of British ferns which he had recently collected during an excursion at Patterdale. Two of the varieties belonged to *Nephrodium montanum*, and one to *Lastrea filix-mas*, this being quite a new and distinct variety, the pinnules being very narrow and linear, giving the pinna a more comb-like appearance than in the typical form. Specimens of *Lejeunia microscopica* from Nant Francon, collected last month, were distributed, this rare species being new to Wales. Three extremely rare hepatics were shown, collected lately in Scotland by Mr. George Stabler, viz., *Scapania planifolia*, *Jungermannia doniana*, and *J. setiformis*.

Manchester Cryptogamic Society. — At the monthly meeting on January 19th, Mr. George Burgess exhibited fine specimens of *Brachythecium albicans* in fruit and barren, and barren specimens of *Trichostomum flavo-virens*, both species having been found at Southport, on New Year's Day, by Messrs. Burgess and Holt. Mr. W. Forster exhibited some fronds of *Asplenium trichomanes* var. *incisa*, a very beautiful variety of this species, and rarely found growing in a wild condition. The plant had recently been found wild in Westmoreland, by Mr. James Barnes of Levens.

Manchester Cryptogamic Society.—On the 18th May, Mr. James Cash, who was in the chair, exhibited specimens of *Pylaisia polyantha*, gathered recently by Mr. James M'Andrew, at New Galloway, Scotland. Mr. F. Bowers exhibited a fine collection of lichens, gathered quite recently at Barmouth, by A. G. Holt; amongst which were *Ephebe pubescens*, *Leptogium lacerum*, and *Umbilicaria pustulata*. Many of the specimens were in fine fruiting condition. Mr. Holt sent for exhibition and distribution the rare *Didymodon recurvifolius*, which he had been fortunate enough to find near Dolgelly during his recent excursion.

Freshwater Algæ near Dewsbury. — During occasional rambles together this spring, my friend Mr. C. B. Crawshaw and myself have come across a fair number of these minute and interesting organisms. Amongst them, we have so far identified *Spirogyra porticalis* var. *quinina* and another species—probably *S. flavescens*, *Mesocarpus*, *Prasiola crispa*, *Chlorococcum*, *Cladophora glomerata*, &c.; but by far the most interesting is the beautiful *Draparnaldia plumosa*, which Mr. Crawshaw found in a small pond at the bottom of a stone quarry, only a few days ago.—C. P. HOBKIRK, Dewsbury, 20th May, 1885.

YORKSHIRE AND NOTTINGHAMSHIRE NATURALISTS AT ANSTON STONES.

The opening of the excursion season of the Yorkshire Naturalists' Union was fixed for the extreme southern corner of the county, close to the borders of Nottinghamshire and Derbyshire. An invitation to participate in the excursion was accepted by the Committee of the Nottingham Naturalists. There was consequently a large gathering of naturalists from both counties upon the platforms of the little station of Kiveton Park (on the M. S. & L. line between Sheffield and Worksop), early in the forenoon of Thursday the 30th of April. The weather was brilliantly fine and all that could be desired. The district appointed for investigation by the main body of excursionists was the valley of the little stream called 'The Stones Dyke,' which runs past Anston Stones and Lindrick Common to Shireoaks—where it enters the county of Nottingham. Other members went in an opposite direction and investigated the extensive sheets of water at Harthill and other places, and the Yorkshire portion of Whitwell Wood. The Chesterfield Canal was explored by some of the conchologists, and the route taken by the geologists is described in the report of that section. All parties converged upon Shireoaks Station, from which they drove or took train to Worksop, where tea was served and the meetings were held at the Lion Hotel.

Tea having been despatched and the usual sectional meetings held, the general meeting was opened at 6.30 p.m. The chair was, in the absence of the president, occupied by one of the Union's most valued ex-presidents, Dr. H. Clifton Sorby, F.R.S., of Sheffield. There was a very large attendance, 125 sitting down to tea, including the Nottinghamshire members. The Yorkshiremen present represented the eleven societies of Barnsley, Bradford (Nat. Soc.), Dewsbury, Doncaster, Heckmondwike, Leeds (three societies), Rotherham, Sheffield, and York. The minutes having from pressure of time been taken as read, several new members were announced, including Messrs. J. A. Brooke, J.P., of Fenay Hall near Huddersfield; Arnold Thos. Watson, of Sheffield; and Joseph Whitaker, F.Z.S., of Rainworth Lodge near Mansfield, Notts. Dr. Handford, president of the Nottingham Naturalists, then proposed a vote of thanks to the Duke of Leeds for permission to visit his estates, and to the various leaders of parties, namely, Messrs. Marriott Hall, F. Brittain, S. H. Bennett, F. W. Dickinson, B. Sturges Dodd, Holmes, T. Carrington, F.G.S., and C. Tylden-Wright, F.G.S. This was seconded by Mr. W. Denison Roebuck, F.L.S., and carried unanimously. Mr. F. Brittain responded. The reports of the various sections were then taken.

In Vertebrate Zoology, Mr. F. W. Dickinson reported, in the absence of the officers of the section. In this section the chief feature of the day's work was the observations made on the avifauna of the district, which is naturally rich in woodland species. In all 54 species were recorded. The date of the excursion was particularly favourable for noting the recently-arrived summer visitors, and of these no less than 21 species were observed, including the Nightingale, Redstart, Whinchat, Wood Wren, Blackcap, Sedge Warbler, Grasshopper Warbler, Yellow Wagtail, Cuckoo, Swift, Turtle Dove, Corn Crake, and Blackheaded Gull. Of resident birds, of which the list included 33 species, may be mentioned the Hawfinch, Reed Bunting, Jay, Kingfisher, Moorhen, Coot, and Wild Duck. A few of the commoner mammals and fishes completed the list.

Mr. B. Sturges Dodd of Nottingham reported on behalf of the Conchological section. Several conchologists had explored the district during the day, including himself, Messrs. Ernest Dufty and W. Gain of Tuxford, Notts; the Rev. Hilderic Friend, M.A., F.L.S., of Worksop; Mr. John Emmet, F.L.S., of Boston Spa (secretary of the section); and Mr. W. Denison Roebuck, F.L.S. The result was that 37 species had been found, being 17 water shells, 3 slugs, and 17 land shells. The conchologists had been very successful, for *Achatina acicula* had been found near Kiveton Park by Mr. Emmet, after a close and determined search for it; and Mr. Roebuck had taken several specimens of *Vertigo minutissima* in the locality which had been indicated by Mr. Pickard of Mansfield, its discoverer there. Investigation of the canal, both at Kiveton Park and at Shireoaks, had yielded *Sphærium rivicola* (one), *S. lacustre* (one, dead), *S. corneum* (plentiful), *Pisidium*

amnicum (numerous), *P. fontinale* (numerous), *Anodonta anatina* (plentiful), *Neritina fluviatilis* (one), *Bythinia tentaculata* and *Valvata piscinalis* (both plentiful), *Planorbis albus* (a few), *P. vortex*, *P. carinatus*, *Physa fontinalis*, and *Limnæa peregra* (all in plenty), and a few small *L. stagnalis*. Of other water shells were found *Ancylus fluviatilis* in the Stones Dyke at Wood Mill, and Mr. W. Eagle Clarke, F.L.S., brought a large *Anodonta cygnea* from Harthill pond. The slugs were *Arion ater*, *A. hortensis*, and *Limax agrestis*, both at Kiveton and Anston. The land shells which were obtained, both at Kiveton Park and at Anston Stones, were *Vitrina pellucida*, *Zonites cellarius*, *Z. nitidulus*, *Z. crystallinus*, *Z. purus* (one, Anston), *Helix aculeata* (Kiveton), *H. nemoralis*, *H. hortensis*, *H. concinna*, *H. hispida*, *H. pulchella* (Kiveton), *H. rotundata*, *Pupa umbilicata*, *Vertigo minutissima* (Kiveton), *Clausilia rugosa*, *Zua lubrica*, and *Achatina acicula* (Kiveton).

For the Entomological section, Mr. G. T. Porritt, F.L.S., of Huddersfield, its president, reported that only a few common species had been observed, and *Herbula cespitalis* was the only one in any abundance. It was in fine condition and very variable.

For the Botanical section the report was given by Mr. P. F. Lee, Dewsbury, one of the Secretaries of the section, to the following effect. The first excursion of the year is generally on too early a date for much to be done in botany. One of the botanical parties took a twelve-mile round in the opposite direction to Anston, skirting the three or four natural-like sheets of water beyond Harthill, and so on to Shireoaks. Near this busy mining village, the party paused to examine what they believed to be the old 'Shire' Oak, a massive, hollow, dead bole, bound with hoop iron, and situate on the point of junction of three counties, Derby, Nottingham, and York. On the way some pretty scenery was enjoyed, and many fairly good plants, either in flower or sufficiently advanced from the baby state to swear by, were gathered. One charming pastoral vale (it alone repaying the long and rather tiring walk), fringed to the right and to the left with bleached limestone crags, standing in relief against the sombre spreading arms of the yew, with its trout-stream meandering along, yielded good flowering specimens of *Erophila vulgaris* DC., *Viola odorata* (both blue and white varieties), *Primula veris*, one of the hybrids (*P. variabilis* Goupil) often taken for the true Oxlip of the south-eastern counties, *Daphne laureola*, and *Lamium amplexicaule*. The first and the last just named (the Vernal Whitlow-grass, and the Henbit Deadnettle), along with *Veronica agrestis*, sub-species *polita* Fries, and *Lithospermum arvense*, in bloom too, were growing happily together, within a two-feet radius, on the sloping bank of the last one of the picturesque lakelets visited, where the wearied botanists and ornithologists laid themselves down to smoke the pipe of peace and to note the continued plash of leaping trout. On a limestone cliff, near a badger's hole (for his footprints were visible), *Asplenium adiantum-nigrum*, and young plants of Ploughman's Spikenard (*Inula conyza*) were observed, while in a copse hard by there were great patches of the fertile fronds of *Equisetum arvense*, and of that fleshy root-parasite, *Lathræa squamaria*, and a large colony of that delicious fungus the Morel (*Morchella esculenta*). Not the least enjoyable feature of the day was the profuse blossoming, in every hedgerow, of the Sloe and the Bullace (*Prunus spinosa* and *P. insititia*). At Anston Crags *Cystopteris fragilis* was gathered. The total number of Phanerogams and higher Cryptogams of the London Catalogue, reached 127. The Rev. Hilderic Friend, M.A., F.L.S., of Worksop, supplemented Mr. Lee's report by giving a list of the micro-fungi which he had observed, viz.:—*Æcidium compositarum* var. *lapsani*, *Æ. ranunculacearum*, *Æ. urticæ*, *Uredo potentillarum*, *Puccinia anemonis*, *P. umbelliferarum*, *Trichobasis lapsanæ*, *Erysiphe graminis*, *Peronospora schleideniana*, *P. parasitica*, *P. ficariæ*, *Protomyces ari*, and *Uromyces ficariæ*.

The report of the Geological section was given by one of its Secretaries, Mr. S. A. Adamson, F.G.S., of Leeds, who stated that the members of the section had had a most practical and valuable field-day. They had as their leader Dr. Clifton Sorby, F.R.S., of Sheffield, and had facilities afforded and kindness shown by the proprietors of the Kiveton Park and the Shireoaks Collieries. Arriving at Kiveton Park station, a waggonette conveyed the geologists to the first-named collieries, passing on the way the fault by which the Rotherham red rock is brought against

the magnesian limestone. At the collieries great courtesy was shown by Messrs. Holmes and Hudson, and much information afforded. Plans and sections of the workings were inspected; and in order to show the nature of the rocks met with in sinking the shafts, one end of the offices had been divided vertically into parallel compartments, and then proportionately horizontally these were now filled in in proper order with the rocks met with, and thus in a unique but accurate manner the section could be studied. The powerful machinery used in working these very extensive collieries was carefully shown and explained, and a descent of the pit offered, but time did not permit of the latter. The way was now led to a very fine section of the red rock, in a quarry a little distance from the colliery. This red rock used to be, as regards its relationship and position, a vexed question with geologists. Professor Sedgwick called it the lower red sandstone, and placed it at the base of the Permian formation, and it was also thus described in the early days of the geological survey. It is now provisionally referred by the Government geologists to an upper division of the coal measures resting unconformably on the main body of that formation. Passing through the pretty village of Harthill, the party arrived at a quarry of very friable sandstone, known as quicksands, at the base of the Permian formation. Very striking and picturesque excavations had been made here. In some places spheroidal concretions of a calcareous nature were observed. Coming to the village of Whitwell, a disused quarry was visited, formerly worked for magnesian limestone. Some good specimens of the peculiar toothed structure found in this rock were obtained. Passing over an outlier of the lower red marl at Red Hill, the geologists were tempted to wander a little from their field-work to inspect the fine old Norman chapel at Steetly, recently very carefully and judiciously restored, and the retired position of which, with its surrounding ancient yew trees, adds much to the solemn beauty of the scene. A little way from the chapel are the famous Steetly Quarries of magnesian limestone, which were visited. This stone, being crystalline, is of a very enduring nature, and has long been used in the erection of buildings of great note. The next call was at the Shireoaks Collieries, where the party was received by Mr. Tylden Wright, F.G.S., and his son. Here, too, similar kindness awaited them as at Kiveton; sections of the mine and specimens of the rock met with were shown. The whole of the extensive plant and machinery was also shown, with many wonderful inventions and labour-saving appliances. After being conducted over the beautiful modern church at Shireoaks, with its fine stained windows, the party proceeded by train to Worksop. A brief outline of what had been done by the Geological section, supplementary to Mr. Adamson's report, was also given by Dr. Sorby. A vote of thanks to that gentleman for the honour he had done the Union by presiding concluded the meeting.

NOTE—POLYZOA.

Paludicella ehrenbergi.—Those of your readers who study the freshwater polyzoa may be interested with the development of *Paludicella ehrenbergi*, which at this season of the year shows the hybernacula described by Van Beneden, but had not been seen by Professor Allman when he published his monograph on the freshwater polyzoa. The Paludicella has not, so far as I know, been found with statoblasts, and it seems very probable that the hybernaculum or winter bud is the only method of development of this species. Van Beneden writes: 'The hybernacula or gemmæ, which under the influence of a favourable temperature, would have grown into the ordinary lateral branches of the polyzoön, but which towards the commencement of winter acquire a conical form, and then become for a while arrested in their development. In this state, surrounded by a firm membrane of a blackish grey colour, they continue until the following spring, when the investing membrane splits to allow the elongation of the branch.' In this stage I have found it, taken from the canal near Chester, on two or three occasions, at this season of the year, and I shall be glad to find that some of your readers have also found it, so as to confirm Van Beneden's description.—Thos. Shepheard, Kingsley Lodge, Chester, 23rd April, 1885.

Naturalist,

BOOK NOTICES.

'Notes on the Geology and Natural History of the County of Durham.—By Robert Calvert, of Bishop Auckland. Price Five Shillings. Bishop Auckland; printed by W. J. Cummins, Eagle Printing Works, 1884.' 8vo., 184 pages, with geological map and sections.

These 'notes', as they are modestly termed, amount to a comprehensive account of the more salient and striking features of the geology and of various branches of the natural history of the county of Durham. There are sixteen chapters, of which the first eight are devoted to the geology and physical geography, the ninth deals with the mammalia, the tenth with the birds, the eleventh with the reptiles, the twelfth with the fishes, the thirteenth with the butterflies, the fourteenth with the moths, the fifteenth with the coleoptera, &c., and the last with the botany. The work can hardly be called a fauna and flora of the county in the widest sense, as the author has expressly limited himself to the conspicuous and more readily-definable species of any group, and has thought it best to omit critical forms and such as are difficult to distinguish from each other—such as, for instance, those of *Salix*, *Juncus*, and *Luzula* in the flora, and nearly all the smaller species of insects. As might be expected, we do not feel disposed to agree with such omissions, except in cases where they have not received careful study. It is of course preferable to omit rather than to mis-name. But as it is of the very essence of a local fauna or flora that in it attention should be more particularly directed to the study of the minute variation of the forms which occur within the area of investigation, we trust that Mr. Calvert's little volume may be the means of stimulating Durham naturalists to further inquiry and to more detailed and more minute investigation, and that the next work which is constructed upon the same lines may embody the results of such investigations.

NOTES AND NEWS.

The Watson Botanical Exchange Club—with commendable promptitude—has issued its first report, the greater part of which is occupied by a list of desiderata for 1885. The list of members comprises 35 names. Critical notes on the plants which have already been received during the Club's—as yet—brief existence, are also given, Mr. Arthur Bennett, F.L.S., being as referee responsible for these.

The list of Yorkshire Sawflies, to which Mr. Wilson's paper in this volume makes so many additions, now numbers about 112 species. It is much to be wished that more entomologists would take up and work out these insects and their geographical range in the north of England. Paucity of literature on the subject can hardly be pleaded as an excuse when we remember that Mr. Cameron's valuable 'Monograph of the British Phytophagous Hymenoptera' has appeared under the auspices of the Ray Society, and also that the exhaustive French monograph, published by M. Ed. André, which constitutes the first volume of his 'Species des Hyménoptères d'Europe et d'Algérie' is available, so that the literature of this interesting group may be regarded as in a tolerably satisfactory state.

The Cumberland Association for the Advancement of Literature and Science, which has extended its range and altered its title so as to include Westmoreland (why not have also included the detached or northern part of Lancashire and formed a 'Lake District Association' with a shorter title and a more natural and well-defined area?) has published the Ninth part of its Transactions, a bulky instalment of about 250 pages, containing numerous papers and notes on the various subjects included in its scope. Mr. J. C. Smith contributes a list of Penrith district plants, Miss Donald some notes on carboniferous gastropods from Penton, and a supplement to her list of Cumberland mollusca, Mr. Goodchild concludes his list of Cumberland and Westmoreland Minerals and gives a paper on the 'Penrith Sandstone,' Mr. T. V. Holmes gives notes on the best locality for Coal beneath the Permian Rocks of North-West Cumberland, and other geological papers are by him and by Dr. J. Leitch. The Rev. H. A. Macpherson contributes bird-notes and Mr. George Dawson a paper on the cuspidate moths of the Carlisle district.

METEOROLOGICAL RETURNS FOR MARCH 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

	Atmospheric pressure.	TEMPERATURE (IN SHADE).					RAINFALL.			
NAME OF STATION; ITS HEIGHT ABOVE SEA-LEVEL; AND NAME OF OBSERVER.	Mean Height of Barometer (reduced to zero and to sea-level).	Mean Temperature for Month.	Extremes. Highest Maximum registered.		Extremes. Lowest Minimum registered.		Total Rain Collected.	Number of Days on which there fell 0·01 inch or more.	Greatest Fall in a Single Day.	
			Amount.	Date.	Amount.	Date.			Amount.	Date.
ISLE OF MAN:										
CRONKBOURNE (140 ft.).. .. A. W. Moore, F.M.S.....	inch 30·051	deg. 40·95	deg. 51·6	20th	deg. 28·6	15th	inch 3·955	17	inch 1·174	31st
W. COAST:										
SILLOTH, CUMB. (28 ft.) .. Rev. F. Redford, M.A...	30·036	39·30	53·20	13th	26·40	31st	2·592	15	0·995	31st
BARROW-IN-FURNESS (—).. W. S. Whitworth	30·053	40·30	55·00	13th	31·00	6, 9, 23, 24	3·930	15	1·770	4th
LIVERPOOL (BIDSTON) (—) J. Hartnup, jun.	30·065	40·80	52·00	31st	32·00	1, 6, 9, 19	1·750	16	0·450	31st
CENTRAL HILL REG.:										
NEWTON-REIGNY (Penrith) (577ft.) T.G. Benn, F.M.S.	30·067	36·70	50·70	14th	24·00	23rd	2·260	14	1·030	4th
HAWES JUNCTION (1,135 ft.) Station-master	*28·797	34·80	50·00	14th	21·00	7th	4·700	14	1·280	4th
STONYHURST (381 ft.)..... Rev. S. J. Perry, F.R.S.	30·067	46·50	54·10	12th	22·90	22nd	3·793	18	1·008	31st
EASTERN LOWLAND REGION:										
NORTH SHIELDS (—) . .. J. W. Irvine	30·035	39·90	55·00	20th	28·00	19th, 23rd	1·680	16	0·370	4th
SCARBOROUGH (120 ft.) .... Allan Rowntree, F.M.S.	30·052	40·28	58·10	20th	31·20	22nd	1·520	14	0·350	4th
YORK MUSEUM (—) ..... The Curator	30·067	39·70	55·00	14th, 28th	25·00	22nd	1·500	14	0·400	3rd
MOORTOWN, LEEDS (500 ft.) G. Paul, F.G.S., F.M.S.	30·095	40·40	56·00	24th, 30th	28·60	10th	1·155	11	0·395	3rd
HULL, DERRINGHAM (10 ft.) Wm. Lawton.....	30·210	39·80	55·00	20th	26·50	22nd	1·80	16	0·490	5th
SPURN POINT (—) ..... J. B. Smith	30·038	40·00	52·00	17th	32·00	19th, 20th	0·980	13	0·240	5th
LOUTH, LINCS. (111 ft.).... T. W. Wallis.....	30·050	38·48	53·00	20th	28·00	2nd	1·430	16	0·320	3rd
LOUGHBOROUGH (—) ..... W. Berridge, F.M.S.....	30·084	40·40	56·00	28th	24·00	15th	0·830	15	0·240	3rd
LONDON	30·087	41·00	60·00	20th	26·00	8th	1·550	7	0·60	21st

* Not reduced to sea-level.

Wind.—1st Division (Isle of Man) wind chiefly W., N.W., S., and S.W. 2nd Division chiefly E., N.E., and S.E., with some N.W. 3rd Division, chiefly N.E. with N.W. 4th Division, Shields, S.W. and W.; York, N.; Leeds (Moortown), N.E.; Spurn, W. and N.W.; Louth, S.W. and N.W. Loughborough, W. and N.W.

Gales.—Isle of Man, gales on 9 days; Silloth, 6 days; Barrow and Liverpool, 2 days each; Newton-Reigny, on 2 days; Stonyhurst, on 2 days; Leeds, on 1 day; Loughborough, on 4 days; Spurn, on 4 days; and London, on 2 days.

Snow.—Isle of Man, on 2 days; Silloth, 1 day; Liverpool, 1 day; Newton-Reigny, 7 days; Hawes, 5 days; Stonyhurst, 1 day; Scarborough, 4 days; Shields, 3 days; Leeds, 2 days; Spurn, 1 day; and Loughborough, 1 day.

Bright Sunshine.—Isle of Man, 127 hours; Silloth, 115 hours; Newton-Reigny, 94 hours; Stonyhurst 98 hours; Hull, 68 hours.

Highest Temperature in Sun.—Isle of Man, 110·6° on 20th; Silloth, 113·1° on 8th; Newton-Reigny, 103·2° on 28th; Stonyhurst, 1·203° on 28th; Hull, 80·08 on 28th; Leeds, 101·00° on 14th.

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THE NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

WM. DENISON ROEBUCK, F.L.S.,

AND

WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

Contents:

PAGE

The Natural History of Lincolnshire—*Editors* .. ..265 to 266
Ornithological Notes from the East Coast in the Spring of 1885—*John Cordeaux* ..267 to 269
Achatina acicula (the Needle Agate Shell) and its occurrence and distribution over the Magnesian Limestone of Yorkshire—*John Emmet, F.L.S.* .. ..270 to 274
Strasburger's New Investigations on the Process of Fertilisation in Phanerogams—*Thomas Hick, B.A., B.Sc.* (concluded) .. ..275 to 278
Ornithological Notes:— 269
Goosanders at Masham, Yorkshire—*T. Carter;* Curious Nest of Song-thrush at Copgrove—*G. T. Porritt, F.L.S.*
Ichthyological Notes:— 269
Basse in Whitby Harbour—*Thos. Stephenson;* Muller's Topknot at Whitby—*Id.*
Conchological Note:— 274
Freshwater Shells eaten by Rats—*Chas. Oldham.*
Botanical Note:— 278
Vicia sylvatica—*William Hodgson, A.L.S.*
The Yorkshire Naturalists' Union at Boroughbridge .. ..279 to 281
Book Notices:— .. ..281 to 282
Forbes' Naturalist's Wanderings in the Eastern Archipelago; Braithwaite's Salmonidæ of Westmoreland.
Notes and News .. ..282 to 283
Meteorological Returns for April, 1885—(Edited by *Geo. Paul, F.G.S., F.R.Met.S.*) .. 284
Bibliography of 1884; Part V.—Lepidoptera (commenced) .. ..285 to 288

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The NATURALIST.

It being the wish of the Editors to make the journal the recognised organ for information concerning the natural history of the North of England, they hope to rely on Naturalists keeping them supplied with articles and short notes from time to time.

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BOOKS RECEIVED.

*The Birds of Lancashire. By F. S. Mitchell.—8vo, cloth, 224 pp., with map and plates. [The Author.

H. O. Forbes' Naturalist's Wanderings in the Eastern Archipelago.—8vo, cloth, with maps and woodcuts. 1885. [Sampson, Low & Co.

Natural History Society of Glasgow.—Proceedings, Vol. 5, Part 3 (1882-83), and Vol. 1 (new series), Part 1 (1883-84). [The Society.

Comparative Anatomy and Physiology. By F. Jeffrey Bell.—1885. 8vo, 555 pp. [Cassell & Co.

Journal of New York Microscopical Society—May 1885. [Society.

Mineralogical Magazine for May 1885. [Mineralogical Society.

Journal of Northamptonshire Nat. Hist. Society. No. 22, May 1885. [Society.

Revue Bryologique. No. 3, for 1885. [T. Husnot, Editor.

Grevillea, a quarterly record of Cryptogamic Botany. June. [Dr. Cooke, Editor.

Midland Naturalist for June 1885. [The Editors.

The Young Naturalist for June 1885. [J. E. Robson, Editor.

*The Naturalist's World for June 1885. [P. Lund, Editor.

*Natural History Journal for June 1885. [J. E. Clark, Editor.

Illustrated Science Monthly for June 1885. [Bogue, Publisher.

*Science Gossip for June 1885. [Chatto and Windus, Publishers.

Memoirs marked * will be noticed in our Annual Bibliography of the Literature of the Physical Features and Natural History of the North of England.

In Preparation.

A Monograph of the Land and Fresh-Water Mollusca of the British Fauna.

The work is intended to be full, detailed, and exhaustive, and adequately illustrative of Variation, Development, and Geographical Distribution.

Co-operation is invited from all interested, and any information or specimens (the common species of every district are particularly desired), will be welcomed and carefully acknowledged. The Authors may be addressed—c/o Mr. John W. Taylor, Office of the Journal of Conchology, Hunslet New Road, Leeds.

Information is at present specially required on the Slugs (*Testacella*, *Limax*, and *Arion*), of which living specimens from every district are desired.

The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, etc., is **John Eggleston, Park Place, Sunderland.** Lists free.

THE NATURAL HISTORY OF LINCOLNSHIRE.

So little information has been recorded bearing upon the natural history of Lincolnshire, or upon any branch of it, that we have thought it well to arrange for the publication of a series of papers thereupon. And although the county has but few natural history or scientific societies, it possesses individual workers of much experience and ability, and more than one, indeed, whose reputation is not merely local, but national. Besides this, several able naturalists living in other counties can boast of their Lincolnshire birth or extraction, and there are doubtless numerous residents of intellect and culture who would willingly render such assistance as is in their power.

Such being the case, we feel that there is ample material for a series of papers which shall bring to a focus such information as may be at present available, and place definitely on record facts which might otherwise be lost to the world.

The first thing requisite is a general introduction setting forth the physiographical conditions offered by the county, and this Mr. Cordeaux has kindly undertaken to prepare for us.

This done, a series of papers is to follow, in irregular succession, at intervals, upon the geology, meteorology, zoology, or botany, or any subdivision of these subjects, either relating to Lincolnshire as a whole, or to definite and natural areas within it.

With this end in view, we invite our readers, and especially our Lincolnshire readers, to send us whatever information they can, and we wish most particularly to draw attention to the fact that every one can assist, be his assistance ever so little or ever so fragmentary. Short notes, odd specimens, whatever they be, all will be useful.

It will assist intending investigators to state summarily what we should like to have done, and with this end in view a brief survey of the subject is now given.

Mammalia.—Mr. Cordeaux has most kindly undertaken to edit the list of mammalia, and will be glad of notes bearing upon the subject. Specimens would also be of value in certain cases, particularly of Bats, Shrews, Weasels, Mice, and the smaller and obscure forms generally. If our readers will forward their notes at once, it is hoped that this list may appear before very long.

Birds.—The existence of so well-known a standard work as 'The Birds of the Humber District' renders it not very imperative to publish a systematic list of Lincolnshire birds early in the series. But although the definite Lincolnshire list be postponed for the present, it is hoped that notes may be sent in, and some could be printed from time to time as 'Stray Notes on Lincolnshire Birds.'

Reptiles and Amphibians.—Records and specimens of these may be sent in at any time.

Fishes.—Records of freshwater fish will always be welcome, and will be duly filed for the use of whomever is asked to write the list.

Marine Fish.—Mr. O. T. Olsen, F.L.S., of Grimsby, has kindly consented to prepare a list in this department, and will be pleased to have records or other assistance.

Land and Freshwater Mollusca.—In this department *specimens* are particularly desired, and every one—if he has a mind—can pick up and forward such examples of snails and slugs as he sees; none are too trivial or too common to be noticed, more especially as the great difficulty experienced is to obtain the very common species. Slugs are desired *alive*, and should be sent in tin boxes, packed with damp moss, or even a wet cloth. Should assistance be speedily forthcoming, this list would be pushed forward and published early.

Marine Mollusca.—We should be pleased to hear from any who are investigating this department—or from any who can forward specimens for examination.

Lepidoptera.—Lists, notes, or specimens, all would be useful.

Coleoptera and other Insects.—The same remarks apply.

Microscopical and other Low Forms of Life.—Notes and lists would be of considerable use.

Plants.—Much the same remarks apply as in the various departments of Zoology.

Geological and Meteorological Papers—especially if dealing with careful and detailed work, would be acceptable.

Bibliography.—Any one who has the time, and the opportunity, for examining the sets of the various scientific journals with a view to collecting such Lincolnshire information as may be already recorded, would confer signal service.

These few observations will serve to indicate the objects which are in view. There is to be no fixed and unvarying law laid down, but at the same time a general idea will be borne in mind. The lists as far as practicable are to be systematic in their scope, and to embody precise and minute details. The time has not yet arrived when we can say of any species that it is 'everywhere' in the county, therefore the observations upon all the species are to be detailed and precise, however common the species may be supposed to be; for it is against all the principles of science to make sweeping deductions from a small and insufficient array of facts. There is therefore scope for accepting all the assistance that may be offered by residents in or visitors to the county of Lincoln.

Naturalist,

ORNITHOLOGICAL NOTES FROM THE EAST COAST IN THE SPRING OF 1885.

By JOHN CORDEAUX,

Great Cotes, Ulceby, Lincolnshire; Convener of the British Association Committee on the Migration of Birds.

Mr. M. Bailey, of Flamborough, reports that on May 3rd, with a N.E. wind, there was a large arrival of Pied Flycatchers (*Muscicapa atricapilla*) and Redstarts (*Ruticilla phœnicurus*), both species on that day being extremely numerous in the hedgerows and gardens on the headland. The Redstarts observed were generally male birds in full plumage. Last year (1884) there was a similar arrival about the same period of Pied Flycatchers, and I was told they were so numerous as to be seen sitting in rows on some of the low hedges. The immigration of the two species together in the spring is interesting, as the migration reports so far published indicate not unfrequently a corresponding movement of the two on passage in the autumn going on at the same dates, both across Heligoland and on the East coast of England; the migration of the Redstart, however, in 1884 commencing somewhat earlier and being prolonged to a later date.

With reference to the large arrival of Pied Flycatchers at Flamborough, it is interesting to find that they occurred during the same period—the first week in May—at Spurn. It was also observed in Norfolk on the 9th. Mr. J. A. Harvie Brown, in a footnote, p. 100 of the Migration Report for 1884-85, calls attention to the fact of an extraordinary migration of the same species on the East coast of Scotland, as observed at the Isle of May, Pentland Skerries, and other stations in the first week in May. It thus appears that this remarkable immigration covered in one broad front the East coast of Great Britain between Norfolk and the Pentland Firth.

An example of the Common Skua (*Stercorarius catarrhactes*) was shot at the North Landing at Flamborough, in the latter part of February or early in March of the present year.

There were two small 'trips' of Dotterel (*Eudromias morinellus*) on my land near the Humber in May—seven on the 14th and five on the 16th. These remained in the locality about three days. As is usually the case, these pretty birds were very tame, and allowed me to walk within a short distance before taking wing. This is somewhat a late date for Dotterel to be seen in our marshes. The old rule in North Lincolnshire is that they may be expected on the high wolds in Lincoln April Fair week, namely, the last whole week in April, moving into the sea-coast districts in the first week of May. On the 19th I walked for several miles through what was formerly a very famous spring haunt of the Dotterel near the Yorkshire coast, but

without seeing any, and could only hear of a pair having been seen in that locality. I have little doubt, however, that the species is yet fairly numerous on the old Dotterel grounds in May. The great extent of the land to be traversed, and the difficulty in distinguishing the birds even at a short distance, on fallow land or newly-sown corn, makes it exceedingly hard for a single observer to draw conclusions as to their abundance or scarcity, yet no year passes that I am not told by shepherds and others of Dotterel having been seen somewhere or other in the district. Since the passing of the Wild Birds Protection Acts their presence, fortunately, does not attract the same attention as formerly.

At the Speeton, Bempton, and Flamborough Cliffs, on this same day, I found three sets of climbers in full swing (no pun was intended), taking the sea-birds' eggs. Up to this date comparatively few had been taken, and the season was reported to be a late one, the continuous north-east winds keeping the fowl out at sea, and retarding the laying. The largest number of eggs I saw brought up after any single descent was thirty-six. I walked the length of the headland between Hunmanby and the North Landing at Flamborough, and found the rocks were fairly covered with Guillemot (*Lomvia troile*), Razor-bills (*Alca torda*), and a few Puffins (*Fratercula arctica*); nothing, however, compared with the enormous numbers resting on the water at a short distance from the cliff foot, and this continuous for several miles—in fact, along the whole range of the breeding cliffs. Comparatively few Kittiwakes (*Rissa tridactyla*) were seen. Some Rockdoves (*Columba livia*) and Stockdoves (*C. œnas*). A nest of the Carrion Crow (*Corvus corone*) with unfledged young on the Bempton Cliffs. All the climbers say there are certainly no Herring Gulls (*Larus argentatus*) or Cormorants (*Phalacrocorax carbo*) nesting anywhere on the south of Filey Bay. Flamborough fishermen again report a white Guillemot, and another, likewise of the common species, which is entirely black all over. This latter has been frequently seen.

There are four sets of climbers working the cliffs between Bempton and Flamborough. In the season of 1884 one party admit having taken, in seven weeks and three days, 30,000 eggs of various sorts. The fishermen also, in their leisure hours, take a considerable number of eggs by climbing from below. It would, therefore, probably be no exaggeration to say that altogether 130,000 eggs are taken in the season, chiefly those of the Guillemot. It is difficult to understand how any species can withstand such a wholesale drain on their nurseries without shewing a perceptible yearly and increasing diminution, more especially when we take into consideration the large

number of old birds slaughtered by 'sportsmen' after the close time, when there are yet quantities of unfledged young on the cliffs dependent upon them. Yet the number of sea-birds, I was told this season by those best able to judge, is considered greater than ever.

The Carrion Crows in the marshes almost invariably choose a thick thorn bush to build in. The nest is placed sometimes not more than seven or eight feet from the ground, and generally overhanging water—a drain or pond. In the vast majority of cases I believe the young get off, for it would tax the utmost energies of one of the smallest and most thorn-proof boys to plunder the nest. I found two nests to-day (May 27th) in thorns, both apparently with young birds in them; and from an old Crow's nest of last year, in a like situation, a Kestrel went off, but I was quite unable to ascertain whether she had eggs or not. This practice of building in bushes in the marshes is no recent one, for old men have told me that when they were boys and went bird-nesting, they often enough found the Carrion Crow's nest in a thorn.

May 27th, 1885.

ORNITHOLOGICAL NOTES.

Goosanders at Masham, Yorkshire.—On the 3rd of January, four Goosanders (*Mergus merganser*) were seen here on the river Yore. One of the birds was shot, and on dissection proved to be a female. The remaining three birds have not been seen since that date, but several flights of the Common Wild Duck, Golden Eye, and Teal have passed up and down the river.—T. CARTER, Burton House, Masham, January 15th, 1885.

Curious Nest of Song-Thrush.—On Whit-Monday, May 25th, I found in the Copgrove Woods, Boroughbridge, the nest of a Song-Thrush (*Turdus musicus*) which to me, and to other members of the Yorkshire Naturalists' Union (who were having an excursion there that day), seemed very curious. It was placed among a number of young shoots covered with green leaves, springing from the bole of a tree, and was formed on the outside entirely of fresh green shoots and leaves of low-growing plants, the rim at the top being of perfectly fresh blades of grass. With the exception of the dung lining, everything visible about it was green, and the contrast to the ordinary nest of the bird, formed of dry withered material, was most marked. No doubt it was done for greater concealment among the surrounding green leaves, the colour of which was exactly matched, except for the dulness of the nest leaves, caused by the withering process, and which would of course increase every day. Whether the bird had itself plucked off the fresh shoots, or they had been thrown out of the gamekeeper's garden, which was a short distance away, I can't say. The nest contained one egg.—GEO. T. PORRITT, Huddersfield, June, 1885.

ICHTHYOLOGICAL NOTES.

Basse in Whitby Harbour.—On the 12th of May a young Basse (*Labrax lupus* Lacép.) was captured above the bridge in Whitby Harbour, in a clasp net, by Dring. This is the first time I have heard or known of one being caught in the harbour, though Yarrell states they frequent harbours.—THOS. STEPHENSON, Whitby, June 9th, 1885.

Muller's Topknot at Whitby.—I see that Whitby is not given in the 'Handbook of Yorkshire Vertebrata' as a locality for this species (*Rhombus punctatus* Bl.). One was captured off here by Freeman, on the 13th of May, 1881. THOS. STEVENSON, Whitby, June 9th, 1885.

ACHATINA ACICULA (THE NEEDLE AGATE SHELL), AND ITS OCCURRENCE AND DISTRIBUTION OVER THE MAGNESIAN LIMESTONE OF YORKSHIRE.

By JOHN EMMET, F.L.S.,

Boston Spa; Secretary of the Conchological Section of the Yorkshire Naturalists' Union.

The late Dr. J. E. Gray, in his admirable edition of Dr. Turton's Manual of British Shells, now superseded by Forbes and Hanley's work, and more recently by that of Dr. Gwyn Jeffreys, gives the following description of one of our loveliest British shells (the only species we have of the genus), and it is sufficiently ample for all practical purposes:—

'*Achatina acicula.* Needle agate shell. Shell slender, smooth, polished, white, with six flat volutions, lower one as long as all the others; mouth elliptical. Amongst the roots of trees, and at the base of limestone rocks. Animal pellucid white, granulately striated; tentacula retractile, cylindrical, upper pair longest, granular, not thickened at the top, smooth, convexly truncated, without any black spot (eyes); lower pair opposite the angles of the mouth; foot compressed, pointed behind; breathing-hole large, rounded, in the middle of the outer lip of the shell. Shell not a quarter of an inch long, taper; aperture oval-oblong, appearing as if cut off at the base, giving the end of the pillar the resemblance of a tooth; outer margin thin, not reflected, nor forming an umbilicus.' Probably other conchologists have described much more simply. I will only add that the name *Achatina* is supposed to be traceable to the Greek and Latin root, *achates* = an agate, alluding to its polish.

Having scrutinised the conchological lists of the Yorkshire Naturalists' Union for the last two years, for the purpose of ascertaining if *Achatina acicula* had occurred anywhere, I find that there is not a single record of its appearance during that period of time, although Filey, York, Otley, Malham, Barnsley, Roche Abbey, Sherburn, Hawes, Helmsley, Spurn, and Doncaster have been visited. If it had been seen, such close observers as Taylor and Nelson, Butterell and Hey, and others, must have recognised and recorded it.

Are we to infer that this enormous stretch of country is prolific in other shells, and that the agate shell is conspicuous by its absence? I should have expected that it would have been taken at Sherburn, Roche Abbey, Malham, and Doncaster; unfortunately, as I have noticed, *A. acicula* has the knack of getting out of the way when the conchologist is abroad.

I believe I was the first to find it in this magnesian limestone district—in July, 1858. I searched for it for years before I found it. I had been going the wrong way about it. I had looked amongst the *débris* at the foot of limestone crags, instead of at the top, and in stone coffins of the Saxon period, according to Dr. J. E. Gray's formula. Dr. Gray says:—'It is very common six or eight inches deep in the ground in Yorkshire, on the tops of gravel pits, and in Saxon coffins.' I examined every Saxon and Roman coffin in York, and other places, with no results. The first specimen I captured was in the course of a desultory walk between Clifford and Bramham village, by the road side, where the marl had been cut through in making the road, and was therefore exposed and weathered. I dug into the marl on the top of the rock, and in two minutes found my favourite shell, very much to my astonishment. The specimens I took were dead ones; and I have seen no living ones in thirty years, although I have taken scores of dead ones and have no doubt that live ones are to be found. All that I have seen look much like sub-fossils, except an occasional transparent and pellucid one here and there, but without animal inside it. Having discovered the Clifford shells, I reasoned inductively that the species would be found under similar conditions all over the limestone tract. I examined five different places or districts, with the same rock, subsoil and marl, and vegetable growth, at distances about a mile apart from each other. As I supposed I should do, I took numerous specimens at each of these five points of observation, and I came to the conclusion that *A. acicula*, instead of being one of the rarest, is absolutely the commonest shell in the district, more abundant than *Helix rufescens*, *H. nemoralis*, or *H. hortensis*; the only competitor as regards numbers being the pest of our gardens, *Limax agrestis*.

Take the magnesian limestone terrace from north to south, and across, as the hunting ground, and reckoning that twenty or thirty specimens may be found in a few square yards, the numbers of *A. acicula* must be almost fabulous, to be counted not by scores or hundreds, but by millions and billions, enough to stock every conchological cabinet in the universe; and this without moving an inch beyond the very limited limestone terrace above named. My old friend Dr. Evans and myself visited a wood near this place some twenty years ago, and I took so many specimens that he could not believe but that I had them already in a pill-box brought from my cabinet. However, he began to find them as I did, and I think we took about forty in perhaps an hour's time; some of them are now before me, mostly opaque, with a few beautiful glassy shells interspersed.

July 1885.

Whenever you find a single specimen of a shell anywhere, it is always natural to conclude that there are others—there must be a paterfamilias, and he must have had a progenitor; in fact, there is a conchological Adam somewhere. Once get upon the scent, and you will do wonders; but I believe you may try all this neighbourhood as carefully as you please, and you will not find a single shell, unless you go about it in the way I have suggested; and this is the reason why it was not found at the various places mentioned at the beginning of this paper.

I have found *A. acicula* upon the laminated as well as the ordinary building limestone, as, for instance, at White Crag, near this place, where there are layers of the agricultural limestone, and upon the very spot where Dr. Martin Lister found *Cyclostoma elegans* two centuries ago. I wonder if he noted *A. acicula* in any of his records?

Dr. Gray, as above stated, recommends searching at a depth of six or eight inches, but my experience is that you will find it at a much greater depth, even as much as eighteen inches below the surface. It depends upon how the marl is deposited, and upon the amount of soil overlying it. The great point is to look for it carefully amongst the marl below the soil, cautiously removing each small fragmentary piece of limestone that covers the rock, and intently looking in every cranny caused by the removal of the said marly and stony pieces, until the shell becomes conspicuous by its white appearance. Sometimes ten or a dozen will be taken in as many inches. If you follow this advice in this locality you will almost invariably be successful. I can always predicate where I shall be likely to find it, and I think Knottingley, Doncaster, Pontefract. &c., have all the necessary conditions for the existence of the shell, and that it only requires patient research in the manner above indicated to find it there, as well as here.

In giving this 'wrinkle' to brother conchologists, which has been very useful to myself, I hope I shall have helped them to put *A. acicula* on some of their future lists. It may also be stated that some of the 'knowing ones' recommend pieces of board rubbed over with suet to be placed upon the grass in those places where the shell is known to be, in order that it may be taken alive. It is worth trouble to find it, for it is one of the prettiest and most fragile of all the forms of *Achatina*, some of which I have found plentifully distributed in the olive gardens at San Remo, and in Rome. But, to my thinking, our British representative is the most beautiful of them all.

A question suggests itself: How is it that this exquisitely fragile shell, with an animal soft, pulpy, and delicate beyond measure, can insinuate itself a foot or more below the soil, often tenacious and

clayey, until it reaches the marl? It evidently does not breed there, but at the roots of grasses. *Why* and for what reason does it go there at all? *How* does it get there? for its powers seem inadequate for the purpose. It gives us pleasure to find it in the marl, but why not stay amongst the grass? What end is served by its burial in the marl? We can understand partly the reason why *Teredo* and *Saxicava* worm their way into rocks and timbers; but I see no cause for a delicate *Achatina* to go below the level where it was born in order to die. I can see no object in it. It spends its life beside highways and in woods, and retires to a mausoleum so deep that if Christians followed its example they would require, not the orthodox 'six feet of earth,' but graves about a mile underground! Why, with all the world before it 'wherewith to choose,' it should deliberately seek a resting place so far removed from its surroundings as a burial vault, is to me very curious.

All the shells I have found under the surface are perfect shells, with the final volution well formed. What instinct or proclivity, or call it what you please, impels so minute an animal to retire in the decline of life so deep into the earth? It does not know it will die. It does not know that others die. Why should it hide the secrets of its diminutive little departure by getting back to the unsympathetic stone and marl of the Permian strata? It dies apparently with great premeditation, adhering to the bare rock. I merely ask for information, as I cannot answer these questions to my own satisfaction.

I had written thus far when our Y. N. U. meeting came off at Kiveton Park, April 30th. My friend Mr. Roebuck met me at Kiveton Park Station, intent upon *Achatina*, which I had almost guaranteed to find for him. We explored the quarries about the station with no results, the superincumbent mass of clayey soil contra-indicating the finding of the shell we wanted. We then walked to Anston Rocks, examining every place likely, still nothing found; so my friend returned to spoon the canal, and whilst he was doing so, I saw some rocks that looked likely, a few hundred yards from the station; there I immediately took two *Achatinæ*, and gave them to Mr. Roebuck for exhibition at the meeting at Worksop. I have proved the truth of my favourite theory above given, and propounded many years ago, as to the distribution of the shell, and felt I had accomplished everything I went to Kiveton Park for. We should have been sorry if our 'mission' had egregiously failed, which it seemed likely to do, even so late as 4 o'clock in the afternoon; but close searching repaid one after all, as it generally does. I suppose it is the first instance of its being recorded of late years at an excursion meeting, and the first time it has been recorded for the extreme south

of Yorkshire. I afterwards went about fifty yards up the Anston Road; close to the station, to the left of the road, and at the depth of nearly two feet, I found a living specimen of *Achatina*, shell hyaline and pellucid, animal soft and delicate, pulpy, yellowish, but I have failed to resuscitate it. It was close by the pathway, and doubtless there are countless millions all over that district, as there are at this place. They only require looking for. To what end do they exist in such numbers? *Cui bono?* What do they feed upon, how spend their existence, for what object, why were they made? All such questions are difficult to answer. We have only one *Achatina*, one *Carychium*, one *Acme*, one *Cyclostoma*, one *Neritina*, all of them exquisite in form, and always worth looking for amongst the other better known shells. I never saw an abnormal specimen of *Achatina* in this country, and I am not aware that any varieties have been noticed.

Since our Kiveton Park excursion I have been reminded that Mr. Wilcock finds *Achatina* numerously at Newton near Wakefield, and Mr. W. Nelson has taken it alive at Pontefract, and dead at Wentbridge.

The Duke of Argyle in a recent article on 'What is Science'? appropriately remarks:—'The minutest living thing is more wonderful than the starry heavens. The minutest creature endowed with life is an organisation more wonderful, more intricate, more impossible for us fully to understand than the whole mechanism of the heavens.' If that be so, certainly great interest is attached to the life history and distribution of the shell we have been describing.

[It will be of interest to add to Mr. Emmet's observations, that Mr. E. Collier has informed us that he has taken *living* specimens in Miller's Dale, Derbyshire. He says that the best way to find the living shells at that place is to turn over the large stones in the loose friable earth near the riverside; by doing this he generally found a few live shells, adhering to the *under side* of the stones, quite out of the light and heat; this was in summer.—W.D.R.]

CONCHOLOGICAL NOTE.

Freshwater Shells Eaten by Rats.—A somewhat similar incident to that quoted by Mr. C. T. Musson, in the *Naturalist* for March, has recently come under my notice. Instead of Mussels, however, the species in this case were *Paludina contecta* and *Planorbis corneus*. Both of these species occur in moderate plenty in a small pond in Birch (a suburb of Manchester). Several small heaps, each comprising two or three dozen empty shells, were lying about on the margin of the pond. In the Paludinæ a large hole had been bitten out of the lowest whorl; whilst in the other species, the centre whorls had been entirely bitten away, in order to reach the morsel within. In the banks of the pond were several rat holes, belonging presumably to the Brown Rat (*Mus decumanus*), for I hardly think that Water Voles would be guilty of the mischief.—CHAS. OLDHAM, Broad Road, Sale, May 15th, 1885.

Naturalist,

STRASBURGER'S NEW INVESTIGATIONS ON THE PROCESS OF FERTILISATION IN PHANEROGAMS.

By THOMAS HICK, B.A., B.Sc.,

President of the Botanical Section of the Yorkshire Naturalists' Union.

(Continued from page 205.)

From all that has preceded, it may be gathered that Strasburger considers it to have been demonstrated that fertilisation depends upon the cell-nuclei, and upon the nuclei alone. The morphology of the nucleus thus becomes an important subject of enquiry, and one on which our author therefore dwells at considerable length. It is shown that every cell-nucleus contains a much-convoluted anastomosing nuclear thread, which forms the intra-nuclear network. This consists of a ground substance of nucleo-hyaloplasma, the idioplasma of Nägeli, in which are embedded the nucleo-microsomes or granules. Between the meshes of the network lie one or more nucleoli, and the whole is contained within the nuclear cavity, which is filled with nuclear sap, and is bounded by the nuclear wall. There is likewise a network in the surrounding cytoplasma, but this does not project into the network of the nucleus. The inter-action between the cytoplasma and the nucleus, when the latter is in the resting condition, is simply dynamical, and although the cytoplasma has the same composition as the nucleo-plasma, there are important morphological and physiological differences between them. The network of the nucleus appears to have a permanent form, while that of the cytoplasma is continually undergoing change. The nucleus seems to be charged with carrying over from one generation to another the hereditary characters of the species, and to this is probably due its firmer structure and its complicated mode of division. The nucleus thus represents the fixed conservative principle of the organism, while the plasticity of the cytoplasma enables it to adapt itself to the changing influences of the environment. Moreover, the nucleus dominates the metabolic processes going on within the cell, and determines the course of development which ultimately produces the features which fix its specific rank. On the other hand, the cytoplasma reacts on the nucleus, excites it to divide, and, after every division, supplies the daughter nuclei with the food stuffs necessary for their increase of mass.

While the specific characters of a plant are thus due to the nuclei of its cells, the individually-acquired peculiarities remain bound up in the cyto-idioplasma. Strasburger agrees with Weismann, Nägeli, and others in thinking that too much importance has been laid upon

these individual peculiarities, and subscribes to the view that the changes organisms exhibit are due to inner causes rather than external influences. It is allowed, however, even on this view, that the long-continued action of external stimuli has some effect, ultimately evoking reactions in the nuclei, which in their turn induce changes in the development of the individual.

Several other matters, all more or less pertinent to his theory of generation, are dealt with by Strasburger, and that, we need hardly say, with rare insight and fulness of knowledge. Among these is the interpretation of the fact that when an organism is brought to the close of its development it again reverts to its original condition, and produces germ cells. Nägeli seems to be of opinion that idioplasma naturally runs through a cycle of changes which bring it back to the starting point of development, and Strasburger thinks such a retrograde development is shown by what occurs in those cells and cell-nuclei of plants which build up the sexual products. Hence he regards the expulsion of a part of their substance by the nuclei and cytoplasma of generative cells as a part of the preparatory process by which these structures are brought back to their primitive condition. The division of the generative cell-nucleus is another part of this process, the result being the reduction in mass of the nucleo-idioplasma it contains. By this reduction the generative cell-nucleus is believed to be relatively poor in nucleo-idioplasma, a circumstance that is indicated by its high capacity for staining. When ready for the act of copulation, the egg-nucleus and the sperm-nucleus possess an equal quantity of idio-plasma, as is demanded by the phenomena of inheritance. It does not follow from this, however, that they should contain equal quantities of food plasma, nor that they should be equal in size. Still, as a rule, the copulating cells are quite equal, though their contents may differ slightly in appearance.

In accordance with his views of the relative functions of the nucleus and cytoplasma of a cell, Strasburger believes that the insignificant changes which the nucleo-idioplasma experiences from inner causes, or from the influence of the cyto-idioplasma, are equilibrated in fertilisation through the union of cell-nuclei from two different individuals. In this, indeed, he sees the advantage of fertilisation, for thereby the constancy of specific characters is continued, and injurious modifications are not allowed to fix themselves and accumulate by integration. In plants destitute of a cell-nucleus, sexual reproduction is, so far as we at present know, altogether absent, and seeing that in the absence of fertilisation variability usually becomes very great, this may be the cause of the difficulty of limiting the species in the *Protophyta*.

It has already been stated that the division of the germ nucleus gives rise to two daughter nuclei, in each of which there are as many pieces of nuclear thread from the father as from the mother, and that all the descendants of the germ nucleus carry a nuclear thread, one half of which is of paternal and the other half of maternal origin. These halves, likewise, must themselves be descended from the grandfather and grandmother of the mother's or father's side, and the latter part again from great-grand-parents and so on. Hence a nuclear thread is in reality compounded of pieces descended from various generations, the pieces being so much the smaller, the further the generation to which they belong goes back. This composition makes the nucleus specially suitable as a guardian of the specific properties of the organism, and explains the complicated phenomena which present themselves when the nucleus divides.

This view of the composition and origin of the nuclear threads leads our author to another conclusion, on which he insists somewhat strongly, viz., that there is no functional difference between the two cell-nuclei, which by their copulation complete the process of fertilisation. This at first strikes one as a strange and indeed a startling conclusion, but Strasburger states that no morphological facts are known to him which the assumption of a functional difference in the two nuclei would demand. The difference, he says, has been assumed on the ground of physiological considerations only, but the nuclei are not different in their nature, and are not sexually differentiated in the sense in which the individuals from which they are derived are so. All sexual differentiations, therefore, serve only the purpose of bringing together the two cell-nuclei which are necessary for the sexual act.

As a final test by which his theory is to be tried, Strasburger considers to what extent it is capable of explaining the phenomena of hybridism. These phenomena, as most naturalists are aware, are peculiar, and by no means easy of explanation. In some hybrids the characters of the male predominate; in others the characters of the female; and in others again both are equally represented. In explanation of this, Strasburger reminds his readers that the female produces not only the egg-nucleus, but also the cytoplasma in which it is embedded, and that in this cytoplasma, according to his theory, the nutrition of the combined nuclear threads takes place. It is therefore conceivable, he says, that the nutrition of the two threads may or may not be quite equal, and in the latter case the characters of the more privileged one will predominate. The well-known circumstance that the hybrids between A and B, and between B and A (the first being regarded as the male), do not always agree in their

characters, he explains as due to the fact that the nourishing cytoplasma is not the same in the two cases, and may therefore give rise to the differences met with. Very occasionally, instances occur in which the fertilisation of B by A is quite possible, but not that of A by B. In such cases it may be that the development of the sperm-nucleus of A is capable of going on in the cytoplasma of B, but that of B cannot advance in the cytoplasma of A. Or it may be assumed that the germ-nucleus is able to direct the development of the cytoplasma of A, but not that of B. Finally, it is not excluded that purely mechanical causes may be at the bottom of these last phenomena, as in some of the anurous *Batrachia*, where, as Pfluger has shown, the spermatozoids of one species have too large a head to pass the micropyle of the egg of the other species. That hybrids are often more or less sterile, he considers may be accounted for on the supposition that under the influence of the combined cell nuclei, the return of the cyto-idioplasma to the embryonal condition is specially difficult, and on that account the formation of generative-cell nuclei is impossible.

Proceeding in this way, Strasburger shows that these and other even more difficult cases of hybrid fertilisation do not stand in opposition to his theory, but, on the other hand, tend in a greater or less degree to strengthen and support it. What verdict competent critics will ultimately pronounce upon it, we do not propose to anticipate, but that it deserves and will obtain the respectful attention of all such, goes without saying. Meanwhile the 'New Investigations' will be studied with the greatest possible interest by all advanced students of botanical science, among whom, as we think, the opinion will prevail, that whatever becomes of the theory, the great body of facts here set forth will not only have an important position assigned them, but will also have considerable influence on the future progress of vegetable physiology.

BOTANICAL NOTE.

Vicia sylvatica.—Towards the close of last year (I believe in your October issue), I noticed some remarks by a correspondent on certain peculiarities of structure which he had observed in plants of this species growing on the rocky coast of Galloway. It at once occurred to me that his description might possibly apply to the stunted type of the same plant, which appears abundantly on the rocky sea-side bluffs on the Cumberland coast line, between Harrington and Whitehaven. I set out in order to verify this assumption, but only to discover that approaching winter had so far cut down the plants for the season, as to render any satisfactory diagnosis impossible. I am quite sensible that a wide difference is observable between these sea-side specimens, and the splendid examples of the Wood Vetch to be met with in Denton Side woods, near Sebergham, Carlisle; but whether the distinction is sufficient to constitute a distinct variety, remains to be determined.—W. HODGSON, Flimby, Maryport, April 24th, 1885.

Naturalist,

THE YORKSHIRE NATURALISTS' UNION AT BOROUGHBRIDGE.

The second excursion for 1885 of the Yorkshire Naturalists' Union was held on Whit-Monday, the 25th of May, at Boroughbridge, for the purpose of investigating the neighbourhood of Copgrove and Staveley, Lofftus Hill, Walkingham Hill, Rigmoor, the Staveley and Roecliffe Carrs, together with such objects of antiquarian interest as the 'Devil's Arrows' and the Roman remains at Aldborough, all situated south or south-west of Boroughbridge. Various routes had been arranged, the chief of them starting from Copgrove Station a little before ten in the forenoon, under the guidance of the Rev. E. P. Knubley, M.A., M.B.O.U., Rector of Staveley, to whom—assisted by Mr. A. D. H. Leadman—the Union were indebted for drawing up the circular and planning the various arrangements. He first led the party to Lofftuss Hill, then to Walkingham Hill, and by Rigmoor to Copgrove Woods and St. Mungo's Well in Copgrove Park. At Walkingham Hill the party was reinforced by the Rev. E. Elmhirst, the Vicar of Farnham, who brought with him a large number of the rarer plants of Farnham Mires, a list of which was placed in the hands of the officers of the botanical section. In Copgrove Park attention was called to a couple of immense larches—one of them measuring 12 feet 4 inches in girth at a foot above the ground, and 95 feet in height—which are believed to be among the first imported into Britain. From Copgrove the walk was continued to Staveley fishpond, and then by Staveley Church, and down the banks of the River Tutt or Fleet Beck, across Roecliffe Carrs to the 'Devil's Arrows,' and so to Boroughbridge. The geological members diverged early from Mr. Knubley's line of route, taking their way through Staveley and Minskip to Boroughbridge, thence to the 'Devil's Arrows,' and afterwards spending the afternoon, under the charge of Mr. A. D. H. Leadman, in examining the remains of old Isurium, its tessellated pavements and Roman antiquities. Members arriving by the eleven o'clock train proceeded through Staveley to join Mr. Knubley's party in Copgrove Woods, and various smaller bodies of members instituted independent lines of route for themselves. All, however, converged upon Boroughbridge by the appointed time, where, at the Queen's Head, a substantial tea awaited them.

Afterwards the general meeting was held. Mr. George T. Porritt, F.L.S., of Huddersfield, the president of the entomological section, occupied the chair. About sixty or seventy members were present, the following sixteen societies being represented:—Bradford (3), Dewsbury, Doncaster, Goole, Heckmondwike, Ilkley, Leeds (3), Malton, Ripon, Rotherham, Wakefield, and York. The minutes of the preceding meeting having been taken as read, from pressure of time, the following new members were elected:—Rev. B. R. Airy (Whitwell, near York), Rev. B. Irvin, M.A. (Saltburn-by-the-Sea), Miss F. A. Penistone (Leeds), and Messrs. Godfrey Bingley (Headingley), H. M. Ellis (Beverley), T. W. Greenwood (Birkenshaw), H. M. Platnauer, F.G.S. (curator of York Museum), and William Wyatt (Worksop, Notts.). Mr. Thomas Hick, B.A., B.Sc., of Harrogate, then proposed, and Mr. J. R. Penistone, of Leeds, seconded, a vote of thanks, to which the meeting unanimously agreed. In it the Rev. E. P. Knubley, M.A., and Mr. Leadman were thanked for organising the excursion and guiding parties during the day; Mrs. Shiffner, of Copgrove Hall, Captain Slingsby, of Scriven Park, Mr. William C. Stobart, of Spellow Hill, and Mr. A. S. Lawson, of Aldborough Manor, for permission to visit their respective estates; and the last-named gentleman for allowing the members free access to the Roman remains at Aldborough. The reports of the various sections were then taken.

The Vertebrate section was represented by its secretary, Mr. James Backhouse, jun., of York, who stated that a large number of both resident and migratory birds had been observed, numbering in all 53 species, whilst 20 were found breeding (chiefly in Copgrove Park). Among the residents, the Jay, Sparrow Hawk, Coot, and Stockdove were perhaps the most interesting, and the Redstart, Ring Ousel, and Wood Wren among the summer visitants. The Nuthatch was, according to Rev. H. H. Slater, occasionally observed near Staveley (which must form almost its northern limit of distribution in Yorkshire), and the Wheatear had been discovered nesting last season on the railway embankment near to Copgrove Station. The mammals, fishes, reptiles, &c., observed were few in number; they included a Fox-cub (dead) and the Smooth Newt.

July 1885.

The Conchological section was represented by its president, Rev. W. C. Hey, M.A., of York, who reported to the meeting, and by one of its secretaries, Mr. John Emmet, F.L.S., of Boston Spa. The most noticeable find of the day was that of a new locality for the local species *Limnæa glabra*, found by Mr. Roebuck in a ditch by the railway side, not far from Roecliffe; with it were its usual associates, *Planorbis spirorbis* and *Physa hypnorum*, the latter being represented by very small specimens, while the *L. glabra* was very fine and large. In the River Tutt at Staveley and elsewhere were numerous specimens of *Ancylus fluviatilis*; while in the fishpond at Staveley, filled with vegetation, such as the two species of water-lilies, were abundance of *Physa fontinalis*, *Planorbis albus*, *P. contortus*, *Ancylus lacustris* v. *albida*, and *Bythinia tentaculata*. The pond also yields *Anodonta cygnea*, as evidenced by a specimen brought by Mr. Knubley. *Limnæa truncatula*, found by the Rev. W. C. Hey, completes the list of 11 freshwater shells. Of slugs 4 species were found, all about Copgrove Woods, viz:—*Arion ater*, *A. hortensis*, *Limax agrestis*, and *L. lævis*. All the species of land shells found were obtained in Copgrove Woods, the list being:—*Succinea putris*, *Zonites crystallinus*, *Z. cellarius*, *Z. nitidulus*, *Helix aspersa* (one, young), *H. hortensis*, *H. cantiana*, *H. rufescens*, *H. hispida*, *H. concinna*, *H. rotundata*, *Clausilia rugosa*, and *Zua lubrica*, altogether 13 in number, bringing up the whole list for the day to 27, by no means a satisfactory total. The members of this section were also interested in observing a bed of subfossil water shells which was exposed along the banks of the Tutt for some distance, and which yielded the following species:—*Sphærium corneum* (several), *Pisidium pusillum*, *P. fontinale*, *Bythinia tentaculata* (abundant), *Planorbis corneus* (a few), *P. contortus*, *P. complanatus*, *P. carinatus*, *Limnæa peregra*, *L. palustris* (all five numerous), *L. stagnalis* (a few), and *Succinea putris* (a few); and had time permitted of an extended search both on the river bank and in the mole heaps in the adjoining fields, no doubt others would have been found. Mr. Knubley brought a similar collection of subfossil shells from the site of an old pond at Staveley, which included single specimens of *Planorbis corneus*, *Limnæa peregra*, *Sphærium corneum*, and *Limnæa auricularia*, and several each of *Planorbis albus*, *P. carinatus*, and *Bythinia tentaculata*.

For the Entomological section, whose president was occupying the chair of the general meeting, Mr. Rudolph Rosenstock, B.A., of Leeds, who had been working at the coleoptera during the day, was called upon to report. In lepidoptera the results were meagre, nothing being mentioned but *Swammerdamia comptella* and *S. pyrella*, both of which had occurred in Copgrove Woods. In coleoptera Mr. Rosenstock had taken *Leistus ferrugineus* L., Copgrove; *Anchomenus angusticollis* Fab., Copgrove; *Pterostichus striola* Fab., Copgrove; *P. melanarius* Ill., Copgrove; *Amara communis* Panz., Copgrove; *Harpalus ruficornis* Fab., Copgrove; *Haliplus lineatocollis* Marsh., Copgrove; *Agabus maculatus* L., Copgrove; *Tachyporus chrysomelinus* L., Copgrove; *Quedius tristis* Grav., Copgrove; *Stenus* sp. ?, Copgrove; *Helophorus intermedius* Muls., *Hydrobius fuscipes* L., these two were taken in a ditch by the railway, Roecliffe (W. D. Roebuck); *Sphæridium scarabæoides* L. Copgrove; *Cercyon hæmorrhoum* Gyll., Copgrove; *C. melanocephalum* L., Copgrove; *Aphodius fossor* L., Copgrove; *A. ater* De G., Copgrove; *A. nitidulus* Fab., Copgrove; *A. luridus* Fab., Copgrove; *A. contaminatus* Hbst., Copgrove; *A. testudinarius* Fab., Copgrove; *Pyrochroa rubens* Fab., Copgrove; *Coccinella variabilis* Ill., Copgrove.

For the Botanical section, its president, Mr. Thomas Hick, B.A., B.Sc., of Harrogate, and Mr. John Jackson, M.P.S., of Wetherby, acting in the absence of the secretaries, reported that the route taken was under the guidance of Rev. E. P. Knubley, and was from Copgrove Station to Lofftus Hill, on to Farnham, thence along a Roman road to Walkingham Hill, and from there to Copgrove Park and St. Mungo's Well. The botanists then proceeded a short distance along the banks of Tutt river, and across fields to Roecliffe, passing those lumps of 'cement' — as irreverently suggested by one of the party — the remarkable monoliths called the 'Devil's Arrows,' and on to Boroughbridge. Of the rarer plants found, the following may be mentioned:—*Stellaria nemorum*, *Prunus communis*, sub-sp. *insititia*, *P. Cerasus*, *Campanula glomerata*, *Hydrocharis Morsus-ranæ*, *Orchis Morio*, *Asplenium Adiantum-nigrum*, and *Botrychium Lunaria*. The Bird's-eye Primrose (*Primula farinosa*) and Solomon's Seal (*Polygonatum multiflorum*) were

Naturalist,

gathered, but it was not stated whether they were truly wild specimens. The whole landscape was made bright by masses of Gorse and Cowslip in full bloom.

For the Geological section the report was given by its secretary, Mr. S. A. Adamson, F.G.S., of Leeds. The members of this section had accompanied Mr. Knubley's party as far as Lofftus Hill; in this neighbourhood there were no good sections to be seen, but at a farmhouse was shown the humerus of some huge mammal, which had recently been found in some draining operations. It was arranged that this be sent shortly to the Leeds Museum for further examination. Good opportunities offered of examining the pebbles and fragments of rock found in the glacial deposits with which so much of the area of the district is covered. In the erratic drift were observed boulders of mountain limestone, chert, and galliard with striæ; while the local drift contained fragments of permian rocks and new red sandstone. The members then proceeded to the 'Devil's Arrows,' huge gritstone monoliths, and afterwards to Aldborough. The Rev. Mr. Elmhirst submitted to the section some good rock specimens, including blocks of tufa and some fragments of magnesian limestone exhibiting a remarkable green colouring, which will be submitted to analysis; and Mr. T. Carter Mitchell, of Topcliffe, exhibited a huge neolithic celt found in his neighbourhood, evidently adapted from a liassic nodule.

The meeting concluded with a vote of thanks to Mr. Porritt, proposed by Mr. J. W. Addyman, B.A., Starbeck, and seconded by Mr. J. R. Penistone.

BOOK NOTICES.

A Naturalist's Wanderings in the Eastern Archipelago, a Narrative of Travel and Exploration from 1878 to 1883. By Henry O. Forbes, F.R.G.S., &c. With numerous illustrations, from the author's sketches and descriptions, by Mr. John B. Gibbs. London: Sampson, Low, Marston, Searle, and Rivington. 1885. [With five Maps.]

The scene of Mr. Forbes' five years of labour in the cause of science is laid in lands already rendered classic by Mr. Alfred Russel Wallace's enchanting book, 'The Malay Archipelago.' The fact that there was scope for much further scientific investigation in these Isles of unique position, each and all of whose fauna and flora is of surpassing interest, since they form the border lands where two great zoo-geographical regions—Oriental and Australian—meet, is well evidenced by the importance of the book before us. Indeed, as one would expect of lands so peculiarly situated, there is yet a great work to be accomplished, especially in regard to their natural history.

We consider the author's model is a happy one for a book of this description. The book is subdivided into the following parts:—I. In the Cocos-Keeling Islands; II. In Java; III. In Sumatra; IV. In the Moluccas and Timor-Laut; V. In Buru; VI. In Timor. Several chapters are devoted to each section in which the natural history, physical features, and the incidents of travel encountered during the sojourn, are pleasantly set forth. Each section is furnished with a scientific appendix devoted to the valuable Ethnological, Zoological, and Botanical results of the author's investigations; and in some cases where but little or nothing was hitherto known of the region under consideration, complete lists of all the species recorded as occurring are furnished. In the preparation of these appendices it is only necessary to mention that the author has had the assistance of such well-known naturalists as Drs. P. L. Sclater and Garson; Messrs. C. O. Waterhouse, R. B. Sharpe, A. G. Butler, W. F. Kirby, G. A. Boulenger, and others, which is a guarantee of their excellence and of their value to the specialist. The book is one of extreme interest throughout, but those chapters devoted to the hitherto *terra incognita*—the Timor-Laut, or Tenimber Islands, and to the but little-known Island of Timor, are specially attractive. The presence, too, of Mrs. Forbes, who went out to be married, and who accompanied her husband for two years, assisting him not a little, adds to the romance of the wanderings.

To the naturalist interested in geographical distribution, or studying the faunas or floras of the Oriental or Australian regions, and also as one of those charming combinations of natural history and travel which have been so popular since Darwin's 'Voyage of the Beagle,' and which are so acceptable to the scientific tendencies of the present time, we have much pleasure in bringing it under the notice of our readers as a book in everyway deserving their attention.

July 1885.

'The Salmonidæ of Westmoreland, Angling Reminiscences, and Leaves from an Angler's Note Book.'—By George Foster Braithwaite. London: Hamilton, Adams, and Co. Kendal: printed by Atkinson and Pollitt, 1884.

The major portion of this work is devoted to chatty reminiscences of an angler's life, and it is in the first few chapters only that the 'Salmonidæ of Westmoreland' are dealt with, and this in a somewhat confused manner. Those species which our author includes are the Salmon, which frequent nearly all the rivers; Salmon-trout, locally called 'morts'; an allied 'species' or variety, locally known as 'sprods'; Bull-trout [a variety of the Salmon-trout], rarely met with even in the tributaries of the Eden; all these being migratory species. Of non-migratory species Mr. Braithwaite speaks of Common Trout, of which a brilliantly-coloured variety occurs in Mallerstang; Great Lake Trout, now—it is to be feared—extinct in Ullswater, though still existing in Windermere; Char, abundant in Windermere and Haweswater, extinct in Ullswater; Gwyniad or freshwater herring, very numerous twenty-five years ago in Ullswater, Haweswater, &c.; Vendace, in Windermere; and the Smelt, or Sparling, plentiful at the Kent mouth. The destruction of the former great value of Lake Ullswater as an angling resort is attributed by the author to the construction of a weir in its effluent stream the Eamont preventing the fish visiting its tributaries to spawn; and he does not consider it due to pollution.

NOTES AND NEWS.

The present number is the twelfth which has been issued under the present Editorship, and would in the ordinary course have terminated the volume. It has, however, been decided that the current volume shall continue to the end of the year 1885, so that future volumes may coincide with the years. In making this announcement the Editors tender their thanks to all who have contributed to the success of their journal, both as contributors and as subscribers.

The Rev. Hilderic Friend, F.L.S., of Worksop, Notts., has corrected the proofs of a great part of his new work entitled 'The Ministry of Flowers,' which will be published shortly by Messrs. W. Swan Sonnenschein and Co., who recently issued 'Flowers and Flower Lore,' by the same author.

This year's list of fifteen elections to the Fellowship of the Royal Society includes the names of Prof. W. M. Hicks, M.A., principal of the Firth College at Sheffield, Prof. A. Milnes Marshall, M.D., of the Owens College, Manchester, and Prof. H. N. Martin, D.Sc.

At the annual meeting of the British Ornithologists' Union, held on the 20th of May, the following—amongst others—were elected Members:—James Backhouse, jun., York; Capt. E. F. Becher, R.A., F.Z.S., Southwell, Notts.; W. F. Brockholes, Claughton-on-Brock, Garstang, Lancashire; and Sir Ralph F. R. Payne Gallwey, Bart., Thirkleby Park, Thirsk.

The annual meeting of the Tyneside Naturalists' Field Club was held on the 19th of May, at Newcastle. Dr. Philipson, president, in his address referred to the death of the Rev. J. F. Bigge, vicar of Stamfordham, an ex-president, and expressed his gratification that both the roll of members (now numbering over 550) and the finances were in so satisfactory a condition. Mr. R. Y. Green, treasurer, stated that the income of the past year, including a balance of £89, was £141 10s., and after meeting all liabilities there remained a balance in hand of £94 18s. 11d. The following gentlemen were elected officers for the current year:—President, Mr. Henry Cooper Abbs; vice-presidents, Mr. James Clephan, Mr. John Hancock, Mr. John Philipson, Mr. D. O. Drewett; treasurer, Mr. R. Y. Green; secretaries, Mr. R. Howse and Mr. Thomas Thompson. The excursions for the year were fixed to be made to Blaydon Burn, Spen, and Rowland's Gill; to Askrigg and Hawes; to Warkworth and the Lower Coquet; to Twizell House and Belford; to Redcar and Saltburn; and to Holywell and Hartley.

Newspapers received from South Africa show that our old friend and colleague Mr. S. D. Bairstow, F.L.S., formerly of Huddersfield, and now of Port Elizabeth, in the Cape Colony, is devoting his energies to the investigation of the natural history of that district with as much zeal and determination as he was known to do by his friends in the old country. The Society of which he is at once secretary and guiding spirit, is working at various branches of the comparatively unknown natural history of South Africa, and with a gratifying amount of success, as its reports show. The conchological report shows that attention is being paid to the marine shells, with the assistance of Mr. G. B. Sowerby, jun., of London, and we note that one of the novelties figures on his authority as *Latirus Bairstowii*, a graceful acknowledgment of the services which that gentleman has rendered to the cause of natural science in South Africa.

Two well-known Lancashire naturalists have recently been lost to us—Nicholas Cooke and Joseph Sidebotham.

Nicholas Cooke died suddenly on the 19th of May, while on a visit to an entomological friend in Surrey. He was 68 years of age, and had been a hard-working entomologist for nearly fifty of those years. A disciple of the Friends' school at York, the contemporary and almost the last survivor of a generation of practical entomologists, of whom Thomas Henry Allis was the type. Among the discoveries associated with the name of Nicholas Cooke and of his brother Benjamin, we may refer to *Nyssia zonaria*, *Deilephila galii*, *Cheimatobia boreata*, and the re-discovery of *Agrotis ashworthii*. An appreciative notice by Mr. C. S. Gregson, which appears in the *Young Naturalist* for June, recapitulates a long list of Cooke's discoveries.

In this case it is a satisfaction to know that a well-known and valuable collection is not to be dispersed far and wide by the auctioneer's hammer, nor is it to be sent to the uttermost ends of the earth. The Liverpool Corporation is to acquire, under Nicholas Cooke's will, the whole of his fine natural history collections. These include exceptionally complete and carefully-named collections of birds' eggs and of British lepidoptera. In the latter are incorporated the whole collection of Noah Greening, the well-known lepidopterist of Warrington, and extensive selections from those made by the late Edwin Birchall.

Joseph Sidebotham died at his residence, Bowdon, near Manchester, on the 30th of May, at the age of 62. He was not only well known as an entomologist, but also in other walks of scientific and literary research. He was a man of culture, an artist and a musician, an excellent photographer and an accomplished microscopist. In astronomy he was of great assistance to Nasmyth when the latter published his work on the moon. In botany it was he who first drew the attention of Manchester naturalists to the freshwater algæ of their district, and the five or six years which he devoted to the botany of Bredbury, Reddish, and the banks of the Tame were productive of twenty-five species additional to the Manchester flora, many of them belonging to the difficult genera *Rubus* and *Carex*. He was a warm friend to science, and to the various scientific institutions of Manchester.

Part 8 of the Transactions of the Yorkshire Naturalists' Union, which has lately appeared, contains two Presidential Addresses, one on 'The Fathers of Yorkshire Botany,' an historical account of the men who laid the foundation of our present knowledge, by Mr. J. Gilbert Baker, F.R.S., delivered in 1884, and the other by Lord Walsingham, whose subject is the 'Probable Causes of a Tendency to Melanic Variation in Lepidoptera of High Latitudes,' delivered in March of this year. The conclusion of the Rev. H. H. Slater's useful 'Flora of Ripon and neighbourhood' is also given, and a continuation of Messrs. Taylor and Nelson's carefully worked out 'Annotated List of the Land and Freshwater Mollusca known to inhabit Yorkshire,' a paper in which geographical distribution is dealt with as it ought to be in a county list, precisely and in a fully detailed manner.

METEOROLOGICAL RETURNS FOR APRIL 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

	Name of Station; its Height above Sea-level; and Name of Observer.	Atmospheric pressure.	TEMPERATURE (IN SHADE).					RAINFALL.			
				Extremes.						Greatest Fall in a Single Day.	
				Highest Maximum registered.		Lowest Minimum registered.					
		Mean Height of Barometer (reduced to zero and to sea-level).	Mean Temperature for Month.	Amount.	Date.	Amount.	Date.	Total Rain Collected.	Number of Days on which there fell 0·01 inch or more.	Amount.	Date.
	ISLE OF MAN:	inch	deg.	deg.		deg.		inch		inch	
	Cronkbourne (140 ft.).... A. W. Moore, F.M.S.....	29·773	44·55	59·20	18th	29·60	3rd	3·354	13	0·652	24th
W. COAST:	Silloth, Cumb. (28 ft.) .. Rev. F. Redford, M.A...	29·744	44·20	63·50	17th	28·50	4th	1·940	9	0·535	22nd
W. COAST:	Barrow-in-Furness (—).. W. S. Whitworth	29·774	44·80	61·00	17th	32·00	3rd	1·880	13	0·480	22nd
W. COAST:	Liverpool (Bidston) (—) J. Hartnup, jun.	29·783	46·20	62·00	17th, 19th	31·00	4th	1·860	17	0·390	5th
CENTRAL HILL REG.:	Newton-Reigny (Penrith) (577 ft.) T.G. Benn, F.M.S.	29·797	43·00	63·50	19th	25·00	14th	2·260	12	0·900	24th
CENTRAL HILL REG.:	Hawes Junction (1,135 ft.) Station-master	*28·547	40·50	61·00	18th	24·00	3rd	3·760	13	0·880	20th
CENTRAL HILL REG.:	Stonyhurst (381 ft.)..... Rev. S. J. Perry, F.R.S.	29·797	53·50	63·30	20th	21·10	4th	1·744	15	0·276	22nd
EASTERN LOWLAND REGION:	North Shields (—) . .. J. W. Irvine	29·787	44·90	67·00	19th	30·00	3rd	1·650	17	0·530	22nd
EASTERN LOWLAND REGION:	Scarborough (120 ft.) .... Allan Rowntree, F.M.S.	29·800	45·04	68·20	19th	32·20	2nd	2·160	17	0·400	9th, 29th
EASTERN LOWLAND REGION:	York Museum (—) ..... The Curator	29·802	45·80	69·00	19th	27·00	3rd	1·420	16	0·320	1st
EASTERN LOWLAND REGION:	Moortown, Leeds (500 ft.) G. Paul, F.G.S., F.M.S.	29·798	43·51	65·80	19th	29·30	5th	1·510	14	0·350	6th
EASTERN LOWLAND REGION:	Hull, Derringham (10 ft.) Wm. Lawton.....	29·790	45·10	72·00	21st	23·00	4th	1·570	17	0·460	1st
EASTERN LOWLAND REGION:	Spurn Point (—) ..... J. B. Smith	29·782	45·40	67·00	21st, 22nd	34·00	3rd	1·180	13	0·370	1st
EASTERN LOWLAND REGION:	Louth, Lincs. (111 ft.).... T. W. Wallis.....	29·790	45·90	71·00	19th, 22nd	25·00	4th	2·100	15	0·620	1st
EASTERN LOWLAND REGION:	Boston, Lincs. (24 ft.).... W.H. Wheeler, M.In.C.E.	29·790	46·00	75·00	19th	28·00	4th	1·270	10	0·490	1st
EASTERN LOWLAND REGION:	Loughborough (—) ..... W. Berridge, F.M.S.....	29·804	46·60	72·00	19th	24·00	5th	1·940	13	0·560	1st
	London	29·800	48·60	73·00	20th	31·00	5th	2·020	11	0·740	15th

* Not reduced to sea-level.

Wind.—1st Division (Isle of Man) E. and N.E., 22 days. 2nd Division main direction N. 2, N.E. 4, E. 5, S.E. 6, S. 2, S.W. 5, W. 3, N.W. 2, calm 1. 3rd Division main direction N. 1, N.E. 7, E. 7, S.E. 6, S. 6, S.W. 3, W. 4, N.W. 3, calm 2. 4th Division main direction N. 3, N.E. 7, E. 4½, S.E. 2½, S. 3, S.W. 4½, W. 2, N.W. 1½, calm ½.

Gales.—1st Division, on 3 days; 2nd Division, 5 days; 3rd Division, 1 day; 4th Division, 9 days at Loughborough; 3 days at Spurn; 1 day at Leeds, North Shields, and Boston.

Snow.—1 day at Liverpool, only.

Bright Sunshine.—Isle of Man, 169 hours; Silloth, 172·25 hours; Newton-Reigny, 134·3 hours; Stonyhurst, 135·9; and Hull, 75·8 hours.

Highest Temperature in Sun.—Isle of Man, 122·0° on 23rd; Silloth, 120·8° on 17th; Newton-Reigny, 118·8° on 30th; Stonyhurst, 127·0° on 30th; Leeds, 112·00° on 30th; Hull, 90·00° on 18th and 19th.

Naturalist,

BIBLIOGRAPHY OF 1884:

Papers and records published during the year with respect to the natural history and physical features of the North of England.

PART V.—LEPIDOPTERA.

CHARLES G. BARRETT.

Cumb., Derbysh.(?), Durham (?), I. of Man., Yorksh., Lincolnsh., Lancs.(?)

Notes on British Tortrices. Ent. Mo. Mag., March, May, and July, xx. 236-244, 267-270, and xxi. 41-45.

These valuable papers contain a few Northern notes. The author considers a very curious moth taken many years ago on the Cumberland moors by Mr. W. Thompson must be a large *Sciaphila abrasana* Dup. (p. 238). Mr. Sang has taken several *S. sinuana* Steph. near Burton-on-Trent (240). *S. subjectana* Gn., at Darlington, feeding on *Lotus* and other vetches (Sang, 242). *S. wahlbomiana* L. was reared some years ago from tops of *Artemisia maritima* by Mr. J. Gardner, of Hartlepool (p. 243). *S. penziana* Wilk. (? Thunb.) = *bellana* Curt., found on rocks and hills about Keswick, Cockermouth, &c. (p. 243). *S. colquhounana* H. D. Cat., tolerably common in seaside rocky localities in the Isle of Man, &c. (p. 244). *Pœdisca occultana* Doug., found feeding on larch on the Yorkshire moors [? Blubberhouses] by Mr. Eedle (p. 268). *P. ophthalmicana* Hüb., larvæ sent by Mr. Hodgkinson, of Preston (p. 268). *Halonota trigeminana* Steph., larvæ found in great abundance on Mablethorpe sandhills, by Mr. W. H. B. Fletcher, October 1880 and 1882 (p. 269). *Tortrix branderiana* L., larva sent by Mr. Hodgkinson, possibly from near Preston (p. 41). *Penthina dimidiana* Tr., larva collected by Dr. Alg. Chapman, near Keswick, Cumberland (p. 43).

BRADFORD NATURALISTS' SOCIETY. **Yorkshire.**

Diary of Natural History Observations for 1884. 28 pp.

Numerous notes on the appearance and capture of lepidoptera in West Yorkshire during the year.

Yorkshire, Westmoreland, Cumberland.

Reports of Meetings. Naturalist, January, June, and July, ix. 106, 196, 214-5.

Notices of the occurrence of lepidoptera in Yorkshire, Westmoreland, and Cumberland.

WM. E. BRADY. **Yorkshire.**

A List of the Macro-lepidoptera of Barnsley. (**Continued.**) Quart. Trans. Barnsley Nat. Soc., 1884; iv. 10-12 and 19-22.

The present instalments include 12 Bombyces, 133 Geometers, 3 Drepanulæ, and 4 Pseudo-bombyces.

MARIA BROCKBANK. **Yorkshire.**

Settle. Nat. Hist. Journ., March 15th, viii. 40.

Tortoiseshell Butterfly [*Vanessa urticæ*] noted flying, January 21st.

E. P. P. BUTTERFIELD. **Yorkshire, Lancashire.**

Captures of Lepidoptera in the Bingley district in 1883. Naturalist, January, ix. 100-101.

Notes on 50 species; a few of the records are for Wharfedale and Ingleborough, and one for Pendle Hill, in Lancashire.

A Correction. Nat., January, ix. 105. **Yorkshire.**

Refers to a note concerning the occurrence of various *Scopariæ* near Bingley.

Ragwort. Young Naturalist, July, v. 191-192. **Yorkshire.**

Long list of lepidoptera taken on ragwort near Wilsden, Bingley.

ROBERT CALVERT. **Durham.**

Notes on the Geology and Natural History of the County of Durham. 1884. Chapter XIII., Butterflies; pp. 140-144. Chapter XIV., Moths; pp. 144-146.

The list of butterflies includes 35 species, with notes of occurrences; of moths only 30 species—all conspicuous forms—are given.

J. W. CARTER. **Yorkshire.**

Entomological Notes from Bradford. Young Naturalist, March, v. 88.

Field-notes, mostly concerning winter moths.

Captures in Upper Wharfedale. Young Nat., October, v. 264.

Erebia blandina, *Miana expolita*, *Pterophorus serotinus*, &c., in Grass Wood, August 10th.

The Death's Head (Acherontia atropos) at Bradford. Young Nat., Oct., v. 262.

One caught at Girlington, September 8th.

B. COOKE, JUN. **Lancashire.**

Acherontia atropos in the centre of Liverpool. Ent., November, xvii. 252; Young Nat., November, v. 282.

One caught in a bacon shop, Elliot Street, in the centre of Liverpool, October 2nd (Ent.) or 22nd (Young Nat.).

N. COOKE.

[Mixodia schulziana]. Ent., November, xvii. 259. **Cheshire.**

Abundant on the Cheshire bogs.

H. H. CORBETT. **Cheshire.**

Gonepteryx rhamni and its Food-plants. Ent., April, xvii. 91-92.

At Stockport, East Cheshire, *Rhamnus catharticus* is by no means common, and *R. frangula* is only grown in a few gardens; but their scarcity is much exceeded by that of *Gonepteryx*, of which the writer has only seen two during fifteen years, and both of these at least twelve years ago.

JOHN CORDEAUX. **Yorkshire, Lincolnshire.**

Notes from the Humber in the Autumn of 1884. Field, Nov. 22nd, p. 716.

Cynthia cardui and *Vanessa atalanta* noted.

EDITORS OF NATURALIST. **Yorkshire.**

Review.—'Transactions of the Huddersfield Naturalists' Society.—Part I.' Naturalist, March, ix. 138.

Criticism of the list of the lepidoptera of the Huddersfield district.

[EDITORS OF YOUNG NATURALIST.] **Yorkshire, Durham, Lake District.**

British Moths. The Genus Tæniocampa. Young Nat., April, v. 115-119.

Records for Yorkshire, Lake District, Durham, are given.

Yorkshire.

The 'Young Naturalist' Illustrated Catalogue of British Insects. Young Nat., June and September, v. 167 and 233.

Lithocolletis acerifoliella = *sylvella* is generally distributed as far north as Yorkshire, probably further; *Coleophora caricella* found as far north as York; and *C. fuscedinella* is common about Huddersfield.

N[octua]. subrosea at Derby. Young Nat., August, v. 216. **Derbyshire.**

Details of the occurrence of this rare insect are given. Though now a thing of the past, it occurred until within the last few years near Little Eaton Junction.

1884. Young Nat., November, v. 276-7. **Lancashire.**

Nepticula Hodgkinsoni Sta., taken at Leyland, near Preston, cited as one of the discoveries of the year.

LYONELL FANSHAWE. **Derbyshire.**

Deiopeia pulchella and Acronycta alni. Ent., June, xvii. 141-142.

The *D. pulchella* is recorded as taken on a brick wall at Repton, Derbyshire, in the autumn of 1874. The other species is recorded from the south.

JOHN FIRTH. **Yorkshire.**

B[ombyx]. Quercus feeding on the Common Garden Saxifrage (Saxifraga umbrosa). Young Nat., October, v. 264.

A ling-feeding larva placed on a hawthorn hedge, preferred a contiguous plant of garden saxifrage, and afterwards fed up well on it.

W. W. FOWLER. **Lincolnshire.**

Captures . . . near Lincoln. Ent. Mo. Mag., December, xxi. 162.

Hesperia paniscus noted as fairly abundant in Langworth Wood.

S. E. GILL. **Yorkshire.**

N. H. Society, Ackworth. Nat. Hist. Journ., October 15th, viii. 134.

Abundance of *Vanessa atalanta* at Ackworth noted.

T. J. GOLDSMITH. **Notts.**

Local Observations [at Nottingham]. Midl. Nat., February, vii. 53.

Vanessa urticæ taken in the streets in January; Winter Moth [*Cheimatobia brumata*] abundant.

C. S. GREGSON. **Lancashire.**

Entomological Localities. Heysham Moss. Young Nat., January, v. 44-45.

Heysham Moss is near Morecambe. Various species cited as having occurred.

J. H. GURNEY.

Food of Sparrows. Zool., October, pp. 428-9. **Notts.**

Recorded as preying in Notts. upon apple-feeding larvæ of *Teras contaminana*.

A. E. HALL. **Yorkshire.**

Second Brood of Smerinthus populi. Ent., September, xvii. 209.

Presumably at Sheffield, though not so stated.

C. G. HALL.

Rearing Larvæ of Tæniocampa opima. Ent., March, xvii. 65-67. **Cheshire.**

Experience related of a batch of eggs from New Brighton, Cheshire.

JAMES HARDY. **Northumberland.**

Report of the Meetings of the Berwickshire Naturalists' Club for the year 1883. Proc. B. Nat. Club, x. 280.

Vanessa atalanta noted near Middleton Hall, N. Northumberland.

GEORGE A. HARKER. **Lancashire.**

Laphygma exigua at Crosby [near Liverpool]. Ent., November, xvii. 253; Young Nat., November, v. 281.

Taken on a lamp, September 16th, 1884, and verified by Mr. Gregson, who pronounced it an addition to the lepidoptera recorded for the district.

J. HARRISON.

Hybernia progemmaria, var. fuscata. Ent., May, xvii. 111. **Yorkshire.**

Record of its occurrence near Barnsley.

T. H. HEDWORTH.

Captures on Tyneside. Young Nat., May, v. 141-142. **Durham.**

Voluminous field-notes on lepidoptera observed in 1883 at Gibside, Thornley, and Dunston, Co. Durham.

Captures at Gateshead. Young Nat., October, v. 264.

The notes refer to *Cymatophora diluta*, *Noctua glareosa*, *Hydræcia micacea*, *Anchocelis litura*, *A. rufina*, *Triphæna pronuba*, and the abundance of *Vanessa atalanta* (larvæ).

W. Hewett.

Lepidopterous Captures near York. Naturalist, Jan., ix. 103. **Yorkshire.**

Notes on twenty-three species.

J. B. Hodgkinson.

Note on Crambus furcatellus. Ent. Mo. Mag., January, xx. 189. **Cumberland.**

Used to be in profusion on Helvellyn, also on Scawfell more sparingly; it requires a good altitude; even Stye Head is hardly high enough; but a few hundred yards further upwards brings one to its head-quarters; it also occurs on Skiddaw.

Nepticula centifoliella. Ent., July, xvii. 166. **Lancashire.**

Eight or nine mines with full fed larvæ found on rose-leaves at Leyland, near Preston, October 1883; from these were bred three specimens the following May.

Elachista densicornella and other captures. Ent., August, xvii. 185.

At Grange and Arnside—numerous species of lepidoptera recorded.

Laphygma exigua in Lancashire. Ent., December, xvii. 274.

One seen by him in the Reform Club, Preston, September 16th, but not captured.

A Nepticula new to science. Ent., December, xvii. 281.

N. Hodgkinsoni Staint.; two males, one female; reared from rose-leaves, April 1884.

? Lancashire or ? Westmoreland.

Peronea comparana [should have been comariana] double-brooded. Ent., January and August, xvii. 20 and 184.

Larvæ collected in June and September produced imagoes in July and October respectively.

Westmoreland, Lancashire.

Further Notes from Witherslack. Ent., July, xvii. 165-6.

Numerous lepidoptera taken at Witherslack, May 30th, and at Grange, June 2nd.

W. F. Kirby. **Yorkshire.**

Entomological Society of London; 3rd October, 1883. Ent. Mo. Mag., April, xx. 262.

Mr. Kirby exhibited a *Zygæna* captured near York, by W. Prest, which the latter thought might be *Z. meliloti*; but the general opinion of the meeting was against their distinctness from *Z. loniceræ*.

Leeds Naturalists' Club.

[Report of Meeting]. Naturalist, June, ix. 197. **Yorkshire.**

Notes of lepidoptera at Addingham, near Ilkley, taken by C. Smethurst.

Arthur Marshall.

Acronycta alni. Ent., September, xvii. 209. **Lincolnshire, Derbyshire.**

A record of three larvæ; one sent from Grantham, Lincolnshire, the other two picked up in the village of Egginton, near Burton-on-Trent, one on a gravel path, the other at the entrance of a rabbit-hole.

T. Meldrum. **Yorkshire.**

Scarcity of C[irrhœdia]. Xerampelina. Young Nat., October, v. 263.

Localities (near Newby Hall and Sleningford Park) which have beforetime produced numerous specimens, were searched with but small success in August, 1884.

J. Cosmo Melvill. **Lancashire.**

Charæas graminis. Ent., November, xvii. 253-4.

A fine female reposing on a large tuft of Hair-grass (*Deschampia flexuosa*) on Kersal Moor, was attracting numerous males, August 22nd. The moth, not before seen in the locality, is this year abundant, not only on the Moor, but also at Prestwich.

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Contents:

PAGE

Bibliography of 1884: Part V.—Lepidoptera (concluded) .. ..289 to 292

Notes on some of the Birds occurring in the Solway District—*J. J. Armistead.* 293 to 298

Marine Algæ of the Scarborough District—*George Massee, F.R.M.S.* .. ..300 to 306

Ornithological Notes:— 298, 299

Great Grey Shrike near Leeds in summer—*Thomas Raine*; Nidderdale Ornithological Notes—*William Storey*; Curious Site for Nest of Missel Thrush—*James Ingleby*; Hawfinch and Water-rail near Boston Spa—*John Emmet, F.L.S.*; Curious death of a Swift—*Id.*; Wild Fowl in Cumberland—*Rev. H. A. Macpherson, M.A.*; Lapwing's Nest with five eggs—*William Storey*; Curlews in the Solway District—*W. Hodgson, A.L.S.*; Little Auk near Tadcaster in July—*Rev. J. Chaloner, M.A.*

Notes on Lepidoptera:— 292

Chærocampa nerii at Hartlepool—*J. Gardner*; Vanessa antiopa at Sheffield in 1875—*A. E. Hall*; Lepidoptera in Green Farm Wood, Doncaster—*G. T. Porritt, F.L.S.*; Lepidoptera near Bingley—*E. P. P. Butterfield.*

Zoological Note:— 309

Note on Spongilla, &c.—*Thomas Shepheard, F.R.M.S.*

Botanical Note:— 306

More Additions to the Wensleydale Flora—*F. Arnold Lees.*

The Yorkshire Naturalists' Union at Pocklington .. ..307 to 309

Book Notice:— 310

Mitchell's Birds of Lancashire.

Notes and News 310, 311

Meteorological Returns for May, 1885—(Edited by *Geo. Paul, F.G.S., F.R.Met.S.*) .. 312

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The NATURALIST.

It being the wish of the Editors to make the journal the recognised organ for information concerning the natural history of the North of England, they hope to rely on Naturalists keeping them supplied with articles and short notes from time to time.

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Advertisements.—Scale of charges may be had on application.

BOOKS RECEIVED.

Sixth Report on the Migration of Birds. [Mr. J. Cordeaux.
The Journal of Conchology for July 1885. [Mr. J. W. Taylor, Editor.
Chester Society of Natural Science.—14th Ann. Report, 1884-5. [The Society.
Liverpool Naturalists' Field Club.—Proceedings for 1884-5. [The Club.
Canadian Science Monthly, Nos. 4 and 5, April and May 1885. [The Editor.
Scottish Naturalist for July 1885. [The Editor.
Journal of Microscopy and Natural Science for July 1885. [Mr. A. Allen, Editor.
Stages of Slaty Cleavage.—Alfred Harker. [The Author.
The Cause of Slaty Cleavage: Compression *v.* Shearing.—Alfred Harker. [The Author.
The Oolites of the Cave District.—Alfred Harker. [The Author.
The Auk, a journal of Ornithology—July 1885. [American Ornith. Union.
Zeitschrift f. d. Gesammte Ornithologie—Buda-Pesth, 1885, heft II. [Dr. Madarasz, Editor.
Revue Bryologique. No. 4, for 1885. [T. Husnot, Editor.
Midland Naturalist for July 1885. [The Editors.
The Young Naturalist for July 1885. [J. E. Robson, Editor.
*The Naturalist's World for July 1885. [P. Lund, Editor.
Illustrated Science Monthly for July 1885. [Bogue, Publisher.
*Science Gossip for July 1885. [Chatto and Windus, Publishers.

Memoirs marked * will be noticed in our Annual Bibliography of the Literature of the Physical Features and Natural History of the North of England.

In Preparation.

A Monograph of the Land and Fresh-Water Mollusca of the British Fauna.

The work is intended to be full, detailed, and exhaustive, and adequately illustrative of Variation, Development, and Geographical Distribution.

Co-operation is invited from all interested, and any information or specimens (the common species of every district are particularly desired) will be welcomed and carefully acknowledged. The Authors may be addressed—c/o Mr. John W. Taylor, Office of the Journal of Conchology, Hunslet New Road, Leeds.

Information is at present specially required on the Slugs (*Testacella*, *Limax*, and *Arion*), of which living specimens from every district are desired.

The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, etc., is **John Eggleston, Park Place, Sunderland.** Lists free.

S. L. Mosley.

A Visit to York. Young Nat., January, v. 39-41. **Yorkshire.**

Capture of *Ennomos tiliaria* in Askham Bog noted.

A Visit to Rainworth Lodge, Notts. Young Nat., March, v. 83-85. **Notts.**

Notes of *Hybernia leucophæaria* and *Phigalia pilosaria*, *H. rupicapraria* and *H. progemmaria* at Rainworth.

Bird Protection, and its relation to Insect Life. Young Nat., July, v. 188-191.

Hybernia leucophæaria and *Phigalia pilosaria* preyed on by tits at Rainworth, Notts.

J. J. Nixon. **Derbyshire.**

The Death's Head Moth (Acherontia atropos) at Derby. Young Nat., October, v. 262-3.

Two specimens found near the railway recorded; reference also made to a capture three years before at Little Eaton.

Nottingham Working Men's Naturalists' Society.

Report of Meeting, Feb. 4th. Midl. Nat., March, vii. 92. **Notts.**

Saturnia carpini 'was taken very plentifully a few years ago by Messrs. W. Watchorn and J. Fox, in Newstead Park, but no specimens can now be obtained.'

C. A. P[arker].

A Cumberland Marsh. Field, May 3rd, pp. 596-7. **Cumberland.**

Hepialus humuli noted as fed on by Gulls, at Drigg Common or Point.

Geo. T. Porritt. **Yorkshire.**

List of Yorkshire Lepidoptera. Trans. Yorksh. Nat. Union. Series D, Vol. II., pp. 94-158.

The present instalment extends from *Xylocampa lithoriza* to *Coleophora virgaureella*, both inclusive.

Double-broodedness of Scopariæ. Ent. Mo. Mag., January, xx. 188.

Scoparia muralis, *S. ambigualis*, and *S. conspicualis* cited as Yorkshire instances.

Lasiocampa ilicifolia. Nat., February, ix. 118.

Refers to its former occurrence in Yorkshire, and advocates re-search for it.

Abundance of Exapate gelatella. Ent., Feb., xvii. 44.

At the end of October and beginning of November occurred in great profusion at Huddersfield and Bingley. The writer also notes that autumnal species have generally been abundant, instancing *Dasypolia templi*, *Hybernia aurantiaria*, and *Cheimatobia brumata* at Huddersfield.

Food-plant of Sciaphila pascuana, &c. Ent. Mo. Mag., May, xx. 277.

Bred freely two seasons ago from larvæ collected spun up in flowers of *Ranunculus bulbosus*, in a rough uncultivated field at Huddersfield. With it also emerged *S. ictericana* in about equal numbers, and one *S. octomaculana*.

Laverna phragmitella in Yorkshire. Nat., July, ix. 213.

New to the county list; found by Lord Walsingham at Sherburn-in-Elmete, June 2nd.

Description of the larva of Crambus pratellus. Ent. Mo. Mag., August, xxi. 62-63.

Bred from eggs laid by moths taken at or near Huddersfield.

Is Pterophorus gonodactylus double-brooded? Ent. Mo. Mag., December, xxi., 160-1.

Usually supposed to be a June insect, but in the Huddersfield district is more frequently taken in the autumn.

G. T. P[ORRITT].

Obituary . . William Prest. Nat., May, ix. 178-179. **Yorkshire.**

Refers to several of Mr. Prest's Yorkshire captures of lepidoptera.

GEO. T. PORRITT. **Yorkshire, Isle of Man.**

The New (?) Form in the genus Zygæna. Ent., January, xvii. 18.

Mr. Prest's var. *eboracæ* of *Zygæna loniceræ* is considered but a diseased form; under similar conditions the same form would occur in any species of the genus. Mr. Porritt has bred it from Manx specimens of *Z. filipendulæ*.

Isle of Man.

Lepidoptera in the Isle of Man in July. Ent. Mo. Mag., February, xx. 216.

Numerous species mentioned, including a few taken by the lighthouse keeper on Douglas Head.

G. PULLEN. **Derbyshire.**

The Lepidoptera of Derby and Neighbourhood. Young Nat., March, April, June, August, and October, v. 93, 103-5, 163-4, 207-9, and 253-4.

Of Sphinges 14, of Bombyces 31, of Geometræ 132, of Drepanulæ 2, of Pseudo-bombyces 11, of Noctuæ 140, of Deltoides 5, of Pyralides 24, of Crambites 15, of Butterflies 35, and of Tortrices 104 species are enumerated.

L. M. REYNOLDS.

Hibernation. Nat. Hist. Journ., December 15th, viii. 180. **Yorkshire.**

Of *Vanessa urticæ* at Harrogate.

JOHN E. ROBSON. **Lancashire.**

Variation in Lepidoptera. Reversion (second paper). Young Nat., March, v. 92.

Refers to a variety of *Anthocharis cardamines* in Mr. Gregson's collection, taken at Southport.

Cumberland, Yorkshire, Northumberland.

A Catalogue of British Lepidoptera and their named varieties. Young Nat., August and November, v. 212-214 and 282-4.

References to *Erebia epiphron*, of which the Cumberland specimens = var. *cassiope* Fab.; to dark Yorkshire specimens of *Larentia cæsiata*; and to *Eupithecia rectangulata* var. *nigrosericeata* Hw., from Newcastle-on-Tyne.

J. T. RODGERS. **Lancashire, &c.**

Lepidoptera observed in the neighbourhood of Oldham in 1883. Young Nat., February, v. 69-70.

Forty-six species are enumerated briefly.

W. DENISON ROEBUCK. **Yorkshire.**

The Holly Blue Butterfly [*Lycæna argiolus*] **in Nidderdale.** Nat., June, ix. 194.

A female taken by Mr. Storey at Guyscliffe, near Pateley Bridge, May 17th.

GEO. ROSE. **Yorkshire.**

Invertebrate Zoology. Quart. Trans. Barnsley Nat. Soc., 1884, iv. 5 and 15.

Notes on the lepidoptera observed in the first half of the year.

ALFRED ROWNTREE.

Lakes. Nat. Hist. Journ., October 15th, viii. 139. **Westmoreland.**

Erebia cassiope noted at the head of Far Easedale, near Grasmere, in July.

EDMUND SHUTTLEWORTH.

Notes from Witherslack. Ent., January, xvii. 4-8. **Westmoreland.**

The detailed results of a week's collecting of lepidoptera at the beginning of July, 1883.

JOSEPH SIDEBOTHAM.

The Story of Œcophora Woodiella. Ent., March, xvii. 52-54. **Lancashire.**

The insect was originally taken by a man named Robert Cribb, of Man-

chester, at an old rotten tree—it is thought alder—'growing not far from the path on the Manchester side of Kersal Moor.' It never occurred there either before or since. Cribb gave a specimen to R. Wood to send to Curtis, who named it after the latter, much to Cribb's disgust and annoyance. Of the 50 or 60 specimens which Cribb took there is one in Curtis's collection (now in Australia) and two in the Owens College Museum at Manchester. All the rest were destroyed at a public-house where Cribb had left them as security for his score. No others are in existence.

RICHARD SOUTH. **Lancashire.**

[Amphidasys betularia v. doubledayaria]. The 'Entomologist' Synonymic List of British Lepidoptera, 1884—page vi. of preface.

Speaking of the development of local forms or races from what are called 'aberrations,' reference is made to the fact that some thirty years ago this form was almost unknown in the Manchester district, where it now occurs in numbers.

H. T. STAINTON. **Lancashire.**

Note on a new Nepticula [*Hodgkinsoni* Staint.] bred from rose in Lancashire by Mr. Hodgkinson. Ent. Mo. Mag., October, xxi. 103.

Bred from larvæ found mining in rose-leaves at Leyland, near Preston.

C. E. STANSFIELD.

Rawdon. Nat. Hist. Journ., March 15th, viii. 40. **Yorkshire.**

Dates of appearance of lepidoptera.

J. H. THRELFALL. **Westmoreland, Lancashire.**

Notes on certain Tineæ. Ent., May, xvii. 113-114.

Numerous species mentioned, captured about Witherslack and Preston, viz.:—*Gelechia ligulella, G. vorticella, G. tæniolella, G. sircomella* (considered to be all forms of one species), *Retinia duplana* (new to England), *Depressaria hypericella* (new to district), *Œcophora minutella, Asychna terminella, Nepticula punctella, N. arcuosella, N. aurella, N. glutinosæ, N. betulicolella, N. gratiosella, N. regiella*, &c.

GEO. TINDALL. **Yorkshire.**

Coleophora currucipennella at Doncaster. Nat., January, ix. 104.

One taken at Green Farm Wood.

W. WARREN. **Lincolnshire.**

Some further remarks on Nepticulæ. Ent. Mo. Mag., January, xx. 186-188.

N. rubivora found in the greatest profusion on the Lincolnshire coast by Mr. W. H. B. Fletcher.

ALBERT H. WATERS. **Westmoreland.**

Helps and Hints for Young Entomologists. Young Nat., July, v. 177-181.

Incidental reference to *Chortobius Davus* at Witherslack.

J. JENNER WEIR. **Cumberland, Westmoreland, Yorkshire.**

Lycæna Argiolus compared with the American Lycæna pseudargiolus. Ent., September, xvii., 193-197.

At p. 194 Mr. Weir writes that he is not 'aware whether in the more northern districts in which the insect [*L. argiolus*] is found, *e.g.*, Cumberland, Westmoreland, and Yorkshire, it differs in any respect from those found in the most southern counties, nor whether in the former districts it is one-brooded, a point I should be very glad to know.'

OWEN S. WILSON. **Lancashire, Yorkshire.**

The Entomology of a Bunch of Flowers. Land and Water, September 13th, p. 269.

Refers incidentally to *Eupithecia virgaureata* occurring in Lancashire and Yorkshire, also to *Collix sparsata* and *Eupithecia constrictata* being only met with in Yorkshire.

W. T. Wright.

Lepidoptera at Nottingham. Ent., January, xvii. 8-11. **Notts.**

Detailed account of the season's work; the places visited including Newstead Park, Colwick Wood, and the immediate neighbourhood of Nottingham town.

J. N. Young. **Notts.**

Breeding Moths in Confinement. 'Records and Obs.' of Rotherham Nat. Soc., No. 1 (July 1884), pp. 10, 11.

Mr. Young having taken battered females of *Liparis monacha* in Sherwood Forest on the 27th July, 1882, reared a brood of larvæ from them the following year, and attempted to continue doing so without the introduction of fresh blood. The third brood, however, were very degenerate, and Mr. Young concluded that, while it was possible to breed moths for one season under unnatural conditions, it was doubtful whether fecundity could be kept up another season.

Yorkshire Naturalists' Union. **Yorkshire.**

[Reports of Meetings, Roche Abbey, May 8th, and Sherburn-in-Elmete, June 2nd.] Nat., June and July, ix. 198-200 and 216-220; also reprinted in Recs. and Obs. of Rotherham Nat. Soc., No. 1, July 1884, pp. 7-9.

Field-notes on the species of lepidoptera observed.

ENTOMOLOGICAL NOTES.

Chærocampa nerii at Hartlepool.—I have to record the capture by myself of a specimen of *Chærocampa nerii* yesterday morning on the railings surrounding my firm's timber yard. It is in fairly good condition, though evidently a hybernated specimen, the colours being somewhat faded. So far as I know, this will be the first record of its occurrence in the north, and it is a grand addition to our fauna.—J. Gardner, 8, Friar Terrace, Hartlepool, 24th July, 1885.

Vanessa antiopa at Sheffield in 1875.—One was captured in our conservatory (about a mile from Sheffield) by a servant in the summer of 1875, and given to my brother, who set it. It is now in my collection. It is undoubtedly an English specimen, as the border of its wings is pure white, and not yellow, as in continental specimens.—A. E. Hall, Norbury, Pitsmoor, Sheffield.

Lepidoptera in the Green Farm Wood, Doncaster, May 30th, 1885.—Mr. George Tindall of Newmarket, Mr. John Harrison of Barnsley, and myself, spent Saturday, May 30th, in the Green Farm Wood, Doncaster. We worked the birches almost exclusively, and found on them larvæ of *Phycis betulella* in plenty, each of us securing a good haul. A few larvæ of the local *Coleophora currucipennella* were taken, and those of *Geometra papilionaria* also occurred. Larvæ of *Cheimatobia boreata* were common enough, but still not so abundant as in the previous season. Of imagos we got the pretty *Phoxopteryx ramana*, *Arctia mendica*, *Platypteryx falcula*, and a number of others.—Geo. T. Porritt, Huddersfield, June 17th, 1885.

Lepidoptera near Bingley.—I have to record the capture of *Orthotænia ericetana* by my brother, near Beckfoot, last June or July. I believe its claim in the list of Yorkshire lepidoptera is based on a single example recorded by Mr. Prest, as having been taken at Stockton-on-the-Forest in 1877. Other additions to our local lepidoptera for 1884, which are perhaps worth recording, are:—*Melia sociella*, taken at Marley, near Bingley; *Penthina dimidiana*, common near Rombalds Moor; *Stigmonota regiana*, near Bingley; *Retinia pinivorana*, common, Blackhills; *Scardia arcella* (one), Blackfoot; *Dicrorampha herbosana*, very common near Beckfoot; *Scoparia conspicualis*, one by my brother, Goit Stock; *S. atomalis*, common on Blackhills in July. These last three species, although not added to our list for 1884, are perhaps worth mentioning, one of them—viz., *S. atomalis*—so far as I know, not having before been recorded for Yorkshire.—E. P. P. Butterfield, Wilsden, near Bingley, April 2nd, 1885.

NOTES ON SOME OF THE BIRDS OCCURRING IN THE SOLWAY DISTRICT.

By J. J. ARMISTEAD,

Solway Fishery, Dumfries, N.B.

The Solway District is rather an important one ornithologically. Owing to the varied nature of the coast, as well as of the interior, we find a great many species, either resident or migratory, as well as casual visitors. The country all round the head waters of the Frith may be most simply described as flat, or slightly undulating, and becoming more hilly towards the south-west. The northern shore is very varied, some parts being wild and rocky, others flat and sandy, while at the mouths of rivers are extensive flats of sand or mud, intersected by creeks, and bounded by saltings or marshes. The county of Kirkcudbrightshire, lying to the north of the Frith, has a seaboard which is more or less mountainous, and the undulating or low-lying lands of Cumberland are backed by the mountains of the Lake District. It may prove to be the northern limit of some birds, as for instance the Stock Dove (*Columba œnas*), which occurs on the northern side of the Frith, but only in a few places on the coast—as far as I have observed, frequenting wooded declivities facing the sea, and well adapted to its habits, and where it breeds. In perusing the following notes the fact must not be overlooked that they are mostly from my own observation only, and on this account may sometimes be meagre, and it is probable that some birds frequenting the inland districts may have been to a greater or less extent unobserved by me, as my chief observatory has been the Frith itself. I am much indebted to the kindness of Mr. James Ferrier of the Ross Light-house, who has carefully noted all the birds occurring there from time to time. It is not to be expected that migrants will be met with in the same numbers as at some of our East Coast lights, but some of the facts recorded are interesting, and I have selected the following as specially worthy of note as throwing some light on the spring migration. It would be interesting to have reports from other stations for about the same dates.

April 12th, 1885. Three Goldcrests seen at 1 a.m. Wind N.E.; fresh breeze.

„ 15th, „ Four Goldcrests seen at 2 a.m. Wind E.; light breeze.

„ 18th, „ Five Goldcrests seen through the night. Wind W.; light breeze.

(This bird appears to be both resident and migratory. In autumn many reach our East Coast, coming across the North Sea.

Query.—Are those seen passing the Ross Light bound for the far north, or only local migrants?)

April 16th, 1885. Seven Wheatears seen through the night.
„ 17th, „ Twenty „ „ „
„ 18th, „ Fifty „ at 5 p.m.
„ 20th, „ A great many seen all through the night. Wind S.; fresh breeze.
„ 21st, „ Many hundreds seen all through the night. Wind S.; fresh breeze.
„ 21st, „ Two Ring Ouzels. Wind S.; fresh breeze.
(*This bird does not stay in the district, as far as I am aware.*)
April 21st, 1885. Two Redstarts. Wind S.; fresh breeze.
„ 21st, „ One Whinchat. „ „
„ 22nd „ Seven Whinchats, at 11 p.m. Wind S.W.; light breeze.
May 20th, 1885. Five Whitethroats, 1.0 till 2.30 a.m. Wind S.E.; light breeze.

LIST.

Whitetailed Eagle. Aquila albicilla.

An Eagle has occasionally been seen flying over at a great height—probably this species.

Peregrine Falcon. Falco peregrinus.

Resident, though not so plentifully as formerly. Breeds annually. I have seen birds of this species which I am convinced have simply crossed the Solway and adjacent low-lying ground, a distance of thirty miles, in quest of food.

Hobby. Falco subbuteo.

Have once seen a bird which I feel certain was this species on the Scotch side of the Solway. Has also occurred in Cumberland.

Merlin. Falco æsalon.

Formerly common on both sides of the Frith; now very scarce on the Scotch side, owing to the increase of game preservation. More plentiful in Cumberland, where I have several times obtained specimens.

Kestrel. Tinnunculus alaudarius.

Still common and breeding chiefly in cliffs, often facing the sea.

Sparrowhawk. Accipiter nisus.

Common, and breeds in cliffs and trees.

Buzzard. Buteo vulgaris.

Still resident in some parts, and breeds in high cliffs and rough rocky eminences, but has been much persecuted by collectors, most of the nests being robbed annually. I cannot hear of its breeding on the Scotch side of the Frith this season, though I have seen a specimen on two occasions during May this year, and once during June and July.

Rough-legged Buzzard. Archibuteo lagopus.

Not resident, but occurs every winter, and is sometimes not uncommon in certain districts at that season. I have obtained a specimen shot near the coast in Cumberland, and have seen several shot or trapped on the Scotch side.

Long-eared Owl. Asio otus.

Generally dispersed, and breeds, but nowhere very common. Frequents woods. I have often come upon these birds in the day-time, roosting among underwood, and have got within a few yards. They fly well by day.

Short-eared Owl. Asio brachyotus.

Not uncommon in winter on moors and mosses.

Barn Owl. Strix flammea.

Generally dispersed, and breeds, but owing to its habit of frequenting old buildings, barns, &c., is in some districts much persecuted, and is much less common than formerly.

Tawny Owl. Syrnium aluco.

Generally dispersed, and breeds. Frequents woods.

Spotted Flycatcher. Muscicapa grisola.

Occurs sparingly.

Pied Flycatcher. Muscicapa atricapilla.

Rare, breeds in Cumberland. I have not met with it on the Scotch side.

Dipper. Cinclus aquaticus.

Common and resident. I have seen this bird occasionally carrying off young Trout, but do not think it destroys the ova; nor is it destructive to the former, except in special cases, such as the frequenting of ponds where large quantities of very young fish are kept. The bird has only once been seen at my fish-ponds on the Scotch side, although common on streams in the neighbourhood; but in Cumberland one has several times commenced regularly frequenting the ponds containing Trout-fry, and has very reluctantly been shot.

Missel Thrush. Turdus viscivorus.

Common, resident.

Fieldfare. Turdus pilaris.

Common in winter.

Redwing. Turdus iliacus.

Common in winter. This is the first of the genus to feel the effects of severe cold. I have seen numbers of them almost unable to fly at times, and many die, especially when the frost is accompanied by a covering of snow.

Thrush. Turdus musicus.

Common; but in this neighbourhood this bird was almost exterminated during a very severe winter about four years ago. It is now decidedly increasing in numbers again.

Blackbird. Turdus merula.

Common.

Ring Ouzel. Turdus torquatus.

Although the district is apparently well adapted for the Ring Ouzel, I have not met with it; but on April 21st two of these birds came to the lantern of the Ross Lighthouse.

Hedge Sparrow. Accentor modularis.

Common.

Robin. Erythacus rubecula.

Common.

Redstart. Ruticilla phœnicurus.

Rare on the Scotch side, where I have not seen it. Breeds in Cumberland. Two seen at lantern, Ross Light, on April 21st.

Stonechat. Pratincola rubicola.

Occurs sparingly all over the district, and some remain during the winter months.

Whinchat. Pratincola rubetra.

Common, one seen at the Ross Light on April 21st, and seven on the 22nd.

Wheatear. Saxicola œnanthe.

Seen in great abundance at the Ross Lighthouse, April 16th to 21st; during the night chiefly.

Grasshopper Warbler. Locustella nævia.

By no means uncommon in some localities, but very seldom seen owing to its hiding habits. I have not observed it on the Scotch side.

Garden Warbler. Sylvia hortensis.

Not uncommon.

Whitethroat. Sylvia cinerea.

Common; five seen at Ross Lighthouse on May 20th.

Lesser Whitethroat. Sylvia curruca.

Much less plentiful than the last.

Willow Warbler. Phylloscopus trochilus.
Common.

Goldcrest. Regulus cristatus.
Not uncommon in some woods. Seen at the Ross Light on April 12th, 15th, and 18th.

Great Tit. Parus major.
Common.

Blue Tit. Parus cœruleus.
Common.

Cole Tit. Parus ater.
Less plentiful than the last.

Marsh Tit. Parus palustris.
Less plentiful than the Cole Tit.

Long-tailed Tit. Acredula caudata.
Common.

Waxwing. Bombycilla garrula.
Has occurred from time to time.

Pied Wagtail. Motacilla lugubris.
Common.

Grey Wagtail. Motacilla melanope.
Common in favourable localities.

Tree Pipit. Anthus trivialis.
Not uncommon.

Meadow Pipit. Anthus pratensis.
Common.

Rock Pipit. Anthus obscurus.
Common on rocky parts of the coast, where it breeds.

Skylark. Alauda arvensis.
Common on cultivated lands.

Snow Bunting. Plectrophanes nivalis.
This bird is to be met with in large flocks on some parts of the coast, chiefly on saltings or in stubbles; but it occurs singly or in pairs on many other parts of the coast where it is decidedly uncommon. It arrives in October, and leaves in the spring.

Common Bunting. Emberiza miliaria.
Pretty well distributed, but in greater numbers on the southern side of the Frith.

Reed Bunting. Emberiza schœniclus.
Same as the last.

Yellow Bunting. Emberiza citrinella.
Abundant.

Chaffinch. Fringilla cœlebs.
Abundant.

Mountain Finch. Fringilla montifringilla.

Common in winter in some localities.

Tree Sparrow. Passer montanus.

Not uncommon in some parts of Cumberland.

House Sparrow. Passer domesticus.

Common.

Greenfinch. Ligurinus chloris.

Common.

Goldfinch. Carduelis elegans.

May often be met with where thistles abound, but is not very common.

Siskin. Carduelis spinus.

A winter visitant, occurring some seasons abundantly.

(*To be continued.*)

ORNITHOLOGICAL NOTES.

Occurrence of the Great Grey Shrike near Leeds.—June 27th, 1885. It gives me pleasure to record the occurrence in this neighbourhood of the Great Grey Shrike (*Lanius excubitor*), especially as it is so rare during the summer months. The bird when first seen was perched on the topmost branch of a hawthorn bush, on the confines of a moor at Adel, near Leeds. I approached it cautiously, wishing to get a good view, and be able to pronounce as to its identity without doubt; to my delight the bird proved not to be so shy as I had anticipated, but allowed me to get quite close before taking flight, and then it only removed a few yards away, and alighted on another hawthorn. In this way I pursued it from bush and tree for some distance, when it flew across the fields out of my way. While continuing this chase I had an excellent opportunity of noticing the ashy-grey back and white patches of the wings and tail which characterise this bird. The bird appears when on the wing to be about the size of a Song Thrush, and in plumage not unlike the Pied Wagtail. After the pursuit I retraced my steps to the starting point, and on examining the bush I found that it had commenced its butchering process, for impaled on the thorns were three bees still alive. I noticed that the bird has no particular method of impaling them; one was pierced through the thorax and another through the abdomen. I examined the bushes and whins to see if by any chance it was nesting here, but found no clue. I give this in detail as I do not know whether the species has often been observed in Yorkshire during the breeding season or not.—THOMAS RAINE, Leeds, July 10th, 1885.

[As the species has not hitherto been recorded as occurring in Britain during the breeding season, Mr. Raine's circumstantial account is of very great interest.]

Nidderdale Ornithological Notes.—Mr. T. E. Yorke has now in his collection at Bewerley Hall a pair of Waxwings (*Bombycilla garrula*), which were shot in Bewerley Woods several years ago.

In May, 1880, a pair of Oystercatchers (*Hæmatopus ostralegus*) were observed on Greenhow Hill, one of which was shot, and is now in possession of Mr. D. Williams of Pateley Bridge.

Mr. R. Charlton of this place has a living female Brown Owl (*Syrnium aluco*) which was taken from a nest in the spring of 1868; it is kept in a large cage in a garden, and Mr. Charlton informs me that when the bird hears any music it makes a peculiar noise; also it has been noticed that when all is quiet large numbers of birds such as Chaffinches, Thrushes, Blackbirds, &c., collect together near the cage, and make a noise as if they wished to attack her.—WM. STOREY, Pateley Bridge, April 14th, 1885.

Naturalist,

Curious site for Missel Thrush's Nest.—On the 23rd of May, 1875, I met with a nest of the Missel Thrush (*Turdus viscivorus*) on the top of a wall in Gateup Gill, with four eggs, on which the bird was sitting. There were not many trees near, the nearest clump being about a mile away. On another occasion, in Nidderdale, I saw several partly-built nests on the tops of the walls, though a clump of trees was not far off.—J. Ingleby, Eavestone, near Ripon, April 7th, 1885.

Hawfinch and Water Rail near Boston Spa, Yorkshire.—The Rev. J. Chaloner tells me that he 'was at Healaugh Manor' the previous day (May 11th), 'and while there one of Mr. Brooksbank's sons caught a hen Hawfinch [*Coccothraustes vulgaris*] hopping on the grass plot. This is only the second instance of that bird being seen about here, within my knowledge.' The Water Rail (*Rallus aquaticus*) is breeding here at Boston Spa this year, and bred here last year also.—John Emmet, Boston Spa, July 13th, 1885.

Curious death of a Swift.—Last year, at Thorp Arch Station, a Swift (*Cypselus apus*) flew violently against the telegraph wire, and so injured itself about the eyes and bill, that it had to be destroyed. Similar cases have occurred elsewhere, and Science Gossip relates several in the March number of this year.—John Emmet, Boston Spa, Tadcaster, March 20th, 1885.

Wild Fowl in Cumberland.—I know no greater pleasure than to spend a few early hours, on a spring morning, upon a tarn frequented by wild fowl. Both on the 31st and to-day I visited a preserved sheet of water and studied the birds, and scribbled until my fingers were frozen by the cold wind. On both days I found the Tufted Duck, Goldeneye, Mallard, and Shoveller; and to-day I disturbed some Teal and Wigeon. To-day there were four male Shovellers on the water within view of me at one moment.—H. A. Macpherson, Carlisle, April 9th, 1885.

Lapwing's Nest with Five Eggs.—On May 15th of last year I was shown the nest of a Lapwing (*Vanellus vulgaris*), containing five eggs, by a farmer named Joseph Bell, who said that such an occurrence had not come under his notice before; but Mr. Kirkby, on the adjoining farm, remembers such an occurrence taking place, though some years ago.—Wm. Storey, Pateley Bridge, April 10th, 1885.

Curlews in the Solway District.—On the morning of Sunday, March 1st, of the present year, I was greatly interested in observing straggling pairs of Curlews (*Numenius arquata*) flying at considerable altitude across the Solway Firth from the direction of Kirkcudbright, apparently on their way to the uplands of Cumberland for breeding purposes. These flights continued regularly for ten days or a fortnight. If Scotch bred birds, surely suitable breeding places might be found nearer home, or possibly the Curlews so seen were originally reared in Cumberland, and had simply crossed the Firth during winter in search of better feeding stations about the estuary of the Dee.—W. Hodgson, Flimby, Maryport, April 24th, 1885.

Little Auk (Mergulus alle) near Tadcaster in July.—As I was following the reaper in one of my grass fields on Thursday last, the 16th inst., I found a Little Auk which had apparently been dead several days. I fancy very few of them have been seen in this part of the country.—J. Chaloner, Newton Kyme, near Tadcaster, Yorkshire, July 18th, 1885.

[The occurrence of this species outside the Arctic Circle during the breeding season is very remarkable, and is believed to be unprecedented, at least so far as the British Isles are concerned. It breeds nowhere on the European continent, in fact, its summer range is restricted to Spitzbergen, Novaya Zemlia, Grimsey (North of Iceland), and Greenland. It is a winter visitant to the British seas, and occasionally occurs far inland after severe gales.—W. E. C.]

MARINE ALGÆ OF THE SCARBOROUGH DISTRICT.

By GEORGE MASSEE, F.R.M.S.,

Scarborough; Secretary for Cryptogamia to the Botanical Section of the Yorkshire Naturalists' Union.

THE Scarborough district includes the coast between Scalby Mills on the north, and Carnelian Bay on the south, a distance of about five miles. A few additional species are stated to occur within these limits, but as they have not been collected, and specimens are not forthcoming, they are not inserted. To Mr. J. T. Milow, of Falsgrave, I am indebted for several of the rarer species.

CRYPTOPHYCEÆ.

Glæocapsa crepidinum Thuret.

Rocks at high water.

Clathrocystis roseo-persicina Cohn.

On decaying algæ.

Dermocarpa prasina Bornet.

Common on the smaller Florideæ.

Xenococcus schousboei Thur., Notes Algologiques, pp. 73-75, pl. 26, figs. 1, 2.

On Ceramium rubrum. New to Britain.

Spirulina tenuissima Kutz.

Mixed with other small forms on the Spa wall.

Oscillaria subuliformis Thwaites.

Scalby Beck, in brackish pools.

Microcoleus chthonoplastes Thuret (= **M. anguiformis** Harv.)

Mixed with Confervæ.

Hormotrichum cutleriæ Harv.

Rare. Near the North Pier, where freshwater drains down the cliff. Forming a thin bright green layer; plants unbranched, flexuous; cells at first quadrate, the contents soon becoming resolved into a globose mass, which afterwards becomes pyriform, the longest diameter being transverse to the axis of the plant, and eventually escapes as a zoogonidium, furnished with two cilia at the narrow colourless end.

Calothrix confervicola Ag.

Not uncommon on species of Ceramium.

Calothrix scopulorum Ag.

Rivularia atra Roth.

On rocks, South Bay.

Isactis plana Thur.

On *Himanthalia lorea*. Rare. The only other British station is Ventnor.

ZOOSPOREÆ.

Chlorochytrium immersum sp. nov.

Cells elliptical, depressed; neck short; zoospores elongate pyriform, with two cilia about three times the length of the body, springing from the colourless anterior end; posterior end with bright green chlorophyll grains.

Endophytic on *Schizonema dillwynii* and *Callithamnion roseum.* When crowded the cells are irregular in shape, but when solitary, elliptical; sunk in the substance of the matrix, from which the short neck—through which the zoospores escape—protrudes; at first filled with bright green chlorophyll, which eventually breaks up into zoospores.

The genus was founded by Cohn for the reception of a species—*C. lemnæ*—found at Breslau, growing in the thallus of *Lemna trisulca.* ('Ueber parasitische Algen von Dr. Ferdinand Cohn.' Beiträge zur Biologie der Pflanzen. Bd. I. s. 87. Tafel II. 1870.)

A second species—*C. cohnii*—was described by Dr. Wright in the Transactions of the Royal Irish Academy (Vol. 26, Part 8, 1878), parasitic on various species of Schizonema, Polysiphonia, &c., also on infusoria, from which the present differs in the shape of the cells and the biciliate elongate pyriform zoospores, all of one size, and containing chlorophyll. Conjugation was not actually seen, but after remaining in motion for some time they came to rest, and assumed a spherical form, when some were observed of larger size, presumably the result of conjugation.

Ulva.—The arrangement of species proposed by Le Jolis in his 'Liste des Algues Marines de Cherbourg' is followed. It will be observed that the genera Ulva and Enteromorpha are united.

Ulva lactuca L. (= **Ulva latissima** Harv.)

Ulva enteromorpha Le Jolis (= **Ulva linza** Harv., **Enteromorpha intestinalis** Harv., **Enteromorpha compressa** Harv.)

Chætomorpha melagonium Kutz. (= **Conferva melagonium** Web. et Mohr.)

South Bay at low-water mark.

Cladophora arcta Dillw.

Rocks, South Bay.

Cladophora lanosa Roth.

Cladophora rupestris L.

Cladophora lætevirens Dillw.

Cladophora fracta Fl. Dan.

Scalby Beck, where it empties into the sea.

Bryopsis plumosa Huds.
Carnelian Bay.

Scytosiphon lomentarius Lyng. (= **Chorda lomentaria** Lyngb.)
Carnelian Bay.

Scytosiphon filum Lamx.
Carnelian Bay.

Punctaria plantaginea Roth.
Rock pools, South Bay.

Desmarestia aculeata Lamx.

Dictyosiphon fœniculaceus Grev.
South Bay.

Myriotricha clavæformis Harv., var. **filiformis** (= **Myriotricha filiformis** Harv.)
On various small algæ in rock pools, South Bay and Carnelian Bay.

Ectocarpus tomentosus Huds.
North Bay.

Ectocarpus fasciculatus Harv.

Ectocarpus littoralis Lyngb.

Ectocarpus siliculosus Lyngb.
Round the Castle foot.

Sphacelaria cirrhosa Roth.
On the smaller algæ, Carnelian Bay.

Cladostephus verticillatus Lightfoot.
Top of the outer reef, North Bay.

Myrionema vulgare Thuret (= **Myrionema strangulans** Grev.; **Myrionema punctiforme** Harv.)
Thuret has united the two British species along with *Myrionema maculiforme* Kutz. under the above name. He considers the differences they present as being entirely due to habitat; when growing on filiform plants it completely surrounds the thread, and is *Myrionema strangulans*; when growing on broad fronds it forms a small pulvinate tuft, and is *Myrionema punctiforme*.

Elachistea fucicola Fr.

Elachistea scutulata Duby.

Myriactis pulvinata Kutz. (= **Elachistea pulvinata** Harv.)
The present genus is separated from *Elachistea* on account of the absence of the long projecting coloured filaments which are present, in addition to the paraphyses, in all true Elachisteæ. All the species are attached to the fronds of the larger brown algæ, and resemble tassels of fine threads springing from a solid minute knob-like base.

Leathesia difformis Aresch.

On rocks exposed at low water; rare at Scarborough, but abundant on Filey Brig.

Chordaria flagelliformis Ag.

Mesogloia vermicularis Ag.

Castagnea virescens Carm.

Carnelian Bay.

Asperococcus echinatus Grev.

South Bay; not so abundant here as at Filey and Bridlington.

Chorda filum L.

Laminaria saccharina L.

North and South Bays; not common, and the fronds are small.

Laminaria digitata Turn.

Rare. Behind the outer reef, North Bay.

Laminaria digitata var. **stenophylla.**

This is the common form, which differs from the type in having a weak drooping stipes, compressed upwards. *Laminaria digitata* does not flourish above low water mark, and has a terete erect stipes.

Laminaria bulbosa Lam.

Two or three plants have been found washed up in the North Bay; it has not been met with growing.

OOSPOREÆ.

Ascophyllum nodosum (L.) Le Jolis.

This genus differs from *Fucus* in having a linear thallus without a midrib, and only four oospheres in a mother-cell.

Fucus vesiculosus L.

Abundant in the North Bay; nearly absent from the south side of the Castle rock.

Fucus serratus L.

Abundant in the South Bay; not common in the North.

Fucus canaliculatus L.

On shelving rocks in Carnelian Bay; left dry at low tide.

Halidrys siliquosa L.

Rock pools, South Bay.

Himanthalia lorea Lyngb.

Sparingly in the North Bay.

FLORIDEÆ.

Trentepohlia virgatula Harv.

Common on the smaller Florideæ.

Porphyra laciniata Ag. (= **Porphyra laciniata** Harv.; **Porphyra vulgaris** Harv.)

Porphyra leucosticta Ag.

North Bay; rare. This species differs from *Porphyra laciniata* in being brighter in colour, and the antheridia are in groups within the margin, and not marginal.

Bangia fusco-purpurea Lyngb.

On stones and woodwork of the South Pier.

Erythrotricha ceramicola Lyngb.

On small algæ in tide pools. Separated from *Bangia* on account of the absence of antheridia and tetragonidia.

Peyssonelia dubyi Crouan.

Forming a liver-coloured film on rocks.

Petrocelis cruenta Z. Ag.

On rocks, North Bay.

Hildenbrandtia rosea Kutz. (= **Hildenbrandtia rubra** Harv.)

On smooth rocks, Carnelian Bay.

Callithamnion plumula Lyngb.

North Bay; rare.

Callithamnion pluma Ag.

Not uncommon on *Furcellaria* and *Laminaria*.

Callithamnion tetragonum Ag.

South Bay.

Callithamnion roseum Lyngb.

Callithamnion byssoideum Harv.

In rock pools, South Bay.

Callithamnion polyspermum Ag.

Callithamnion rothii Lyngb.

Forming a dense velvety pile on rocks and clay near low water. We find the tetraspores cruciate, as described by Thuret, Nægeli, and Farlow; Harvey describes them as being tripartite.

Griffithsia setacea Ag.

South Bay. Rare. In this species the 'continuity of protoplasm' was first observed.

Halurus equisetifolius (Ag.) Kutz.

One specimen thrown up in the North Bay. Not uncommon at Bridlington.

Ptilota plumosa Ag.

Ptilota elegans Bonnem. (= **Ptilota sericea** Kutz.)

Ceramium rubrum Ag.

Ceramium rubrum Ag. var. **proliferum** Ag. (= **Ceramium botryocarpum** Harv., Phyc. Brit., pl. 215).

Ceramium deslongchampsii Chauvin.
North Bay.
Ceramium diaphanum Roth.
Carnelian Bay.
Ceramium nodosum Harv.
South Bay. Not common.
Ceramium acanthonotum Carm.
South Bay. Common.
Ceramium ciliatum Ducluz.
South Bay. Rare.
Gloiosiphonia capillaris Carm.
North Bay. Rare. Not found growing.
Phyllophora membranifolia Ag.
North Bay. Rare.
Ahnfeldtia plicata (Kutz.) Fries.
Cystoclonium purpurascens Kutz. (= **Hypnea purpurascens** Harv., Phyc. Brit., pl. 116).
Gigartina mamillosa Ag.
Chondrus crispus (L.) Stack.
Callophyllis laciniata Grev.
In both bays, but sparingly.
Calliblepharis ciliata Grev.
Not common.
Plocamium coccineum Lyngb.
Furcellaria fastigiata Lamx.
Delesseria sinuosa Lamx.
South Bay. Rare and small.
Delesseria alata Lamx.
Delesseria alata Lamx. var. **angustissima** (= **D. angustissima** Harv.)
All stages, from the wingless blade of *angustissima* up to typical *Delesseria alata*, occur.
Delesseria hypoglossum Ag.
North Bay. This is the rarest of the *Delesseriæ*.
Delesseria sanguinea Lamx.
Odonthalia dentata Lyngb.
Carnelian Bay. Only once found.
Polysiphonia urceolata Grev.
Polysiphonia nigrescens Harv.
Polysiphonia atro-rubescens Grev.
Polysiphonia fastigiata Grev.
Polysiphonia elongata Harv.
South Bay. Rare.

Polysiphonia byssoides Grev.

South Bay. Rare. In this species conceptacles and tetragonidia have been observed on the same plant.

Dasya coccinea Ag.

North Bay. Rare.

Dasya arbuscula Ag.

South Bay and Carnelian Bay. Rare.

Laurencia pinnatifida Lamx.

Lomentaria kaliformis Hook.

North Bay. Not common.

Chylocladia articulata Grev.

Corallina officinalis L.

Melobesia polymorpha Harv.

Melobesia pustulata Lamx.

BOTANICAL NOTE.

More Additions to the Wensleydale Flora.—I have to report the discovery of two more plants here, a Bur-Reed and a Grass, which are, so far as I know, quite new to Wensleydale.

The Bur-Reed of this district, that growing in Hawes brook, in Ellerbeck by Woodhall, and in the Bain at Semerwater, is *Sparganium neglectum* Beeby; *not* the form of current text-books (*S. ramosum* Huds.) given therein as having an obovate truncated drupe, with a short, abrupt beak; but the newer type or sub-species described and figured by Mr. W. H. Beeby in the July number of the *Journal of Botany* (vol. xxiii., p. 193). This neglected form has sessile fruits, densely aggregated into heads, of course, as in *S. ramosum*, but each drupe would appear to have a much less marked tendency to develop two seeds, and, partly in consequence of this perhaps, is more elongated ('more than twice as long as broad, exclusive of beak), more spindle-shaped, narrowing gradually upwards into the long, slightly curved, persistent style (beak). The anthers seem to be longer, too, in the Wensleydale plant than in *ramosum*, but I have only been able, yet, to compare them with one batch of specimens from near Bedale. The habit and stature of this new Bur-Reed are said to be quite like those of ordinary *ramosum*, though I fancy it is, if anything, a smaller, less robust plant (here it is 2 to 2½ feet high only), with paler green foliage. If Yorkshire botanists will this month, and the next, examine the Bur-Reeds of their respective localities, and report which 'species' they find prevail, to Mr. Beeby (14, Ridinghouse Square, London, E.C.), or to me, the object of this note will be attained.

The Grass, new to District vii. (Upper Yore) of Baker's 'North Yorkshire,' is *Calamagrostis epigejos* Roth. Baker gives it as a plant of the lowlands of the central vale of York only, at from 0 to 150 yards. I have just detected it growing in plenty in 'Backwater Spinney'—a small marshy wood, a quarter of a mile to the east of Hawes station, the altitude being a few feet above that of the river-bed, which at Hawes New Bridge is 750 feet; *i.e.* an extension in upward range of more than 100 yards beyond any locality of which Mr. Baker in 1862 was cognizant.

Whilst writing, I may mention another ascertained extension of range. The Yellow Flag, *Iris pseudacorus*, L., grows in the Backwater at Hawes at 750 feet alt. [150 yards given by Baker], and this Hawes form is a. *genuinus* E. B. Syme, with short claw, and broad, clear, deep yellow blade, not the commoner form, b. *acoriformis* Bor., which has sepals of a paler yellow with a deep orange spot at the base, and a long claw prominently veined with purple. The Yorkshire distribution of both varieties wants working out.—F. A. Lees, Hawes, Wensleydale, July 13th, 1885.

Naturalist,

THE YORKSHIRE NATURALISTS' UNION AT POCKLINGTON.

The third meeting for 1885 was held at Pocklington, on Wednesday the 24th of June, the object being to investigate the natural history of the neighbourhood of Warter, Kildwick Percy, and the western escarpment of the Wolds. Unfortunately the weather—contrary to what the Union almost invariably enjoys—was very wet, rain falling more or less steadily throughout the day. The attendance was consequently reduced to less than a score of members, but these, as might well be expected, included several of the ablest investigators the Union possesses; and the rain was to them merely a matter of inconvenience, and it was not allowed either to quench the spirits of the party or to mar the success of their investigations. The results of the day's work were quite worthy of being compared with those of previous meetings; and what shortcomings there might be were attributable not so much to the weather as to the reduction of the number of the party and the consequent restriction of the area searched over. When the excursionists muster by scores or hundreds, they separate more and cover a greater extent of ground; while smaller parties keep together for company's sake, and are therefore not able to investigate more than a limited area.

Among the members present on Wednesday there were representatives of all the sections into which the Union is divided, except the Entomological Section. The Vertebrate Section was represented, in the absence of its officers, by Mr. Leonard Gaunt, of Farsley (who took the secretary's place for the time being); Mr. W. Booth of Leeds; and Mr. John Watson, jun., of Newcastle-upon-Tyne and Beverley; and they were reinforced for the day by some local gentlemen, including Mr. Geo. Steels, the local taxidermist, and Mr. W. Wox, of Barmby Moor, a keen and energetic collector, who only requires encouragement and a little book-knowledge to make a good naturalist. The Conchological Section was strongly represented, including Mr. J. Darker Butterell, of Beverley, secretary of the section; Mr. L. B. Ross, F.C.S., of Driffield; Mr. W. Denison Roebuck, F.L.S., of Leeds, one of the general secretaries of the Union; and Mr. H. T. Soppitt, of Bradford. The Entomological Section, as we said above, was the only one unrepresented; but the Botanical Section had, in the persons of the Rev. Wm. Fowler, M.A., Vicar of Liversedge, an ex-president of the Union; Mr. P. F. Lee, of Dewsbury, secretary of the section, and Mr. Soppitt, of Bradford, a trio of the best of Yorkshire botanical investigators, the two first-named working at the flowering plants, and the last-named at the fungi, while yet a fourth, Mr. John Eastwood, the secretary of the Bradford Naturalists' Society, was engaged in gathering mosses. The Geological section was most ably represented by its President, the Rev. E. Maule Cole, M.A., Vicar of Wetwang, and one of its secretaries, Mr. S. A. Adamson, F.G.S., of Leeds.

All the members reached Pocklington or Nunburnholme about eleven o'clock in the forenoon, and two lines of route were formed, one starting from Nunburnholme for Mr. C. H. Wilson's estates at Warter, under the guidance of Rev. E. M. Cole—and the other, starting from Pocklington for Admiral Duncombe's estates at Kildwick Percy, was in charge of the local gentlemen, Mr. Geo. Steels and Mr. W. Wox. The whole day was spent in the woods and fields. Mr. Steels' party first inspected what he had to show in his place of business, this giving an idea of what had been obtained in the neighbourhood, so far as birds were concerned, and afterwards investigated the Kildwick Percy demesnes.

Most of the members of both parties reached Pocklington about half-past four, and at once proceeded to a meat tea—a meal which was most excellently provided by Mr. A. W. House at the Feathers Hotel, and was duly appreciated. One of the chief regrets of the day was that there was not a full attendance of members to do justice to Mr. and Mrs. House's catering. The usual meetings were held before rising from the tea table, the Rev. W. Fowler, in his capacity of vice-president, presiding. The minutes of the preceding meeting were taken as read, and three new members were elected—viz., Mr. Edward Bidwell, M.B.O.U., of London; Mr. Edgar Pickard, of Mansfield, Notts; and the Rev. G. A. W. Huddart, M.A., LL.D., of Kirklington, near Ripon. A vote of thanks to the leaders of parties, and to Mr. C. H. Wilson, M.P., and Admiral Duncombe, for permission to visit

their respective estates at Warter and Kildwick Percy, was then unanimously adopted. There was not time to read the various reports of the sections, as is usually done, and it was arranged that they be handed to the secretaries. They were to the following effect :—

For the Vertebrate section, in the absence of its officers, Mr. Leonard Gaunt, of Farsley, reported that the ornithologists had noted 45 species of birds ; Mr. John Watson and Mr. Geo. Steels having visited Kildwick Percy, while Mr. Gaunt himself and Mr. Walter Booth had investigated the grounds of Warter Priory. Of the 45 birds noted, 32 were permanently resident species and 13 were summer visitors. The latter were the Redstart, Whinchat, Chiffchaff, Willow Wren, Wood Wren, Whitethroat, Sedge Warbler, Spotted Flycatcher (nesting in abundance), Tree Pipit, Swallow, Martin, Swift, and Corn Crake. The residents seen were the Redbreast, Missel Thrush, Song Thrush, Blackbird, Wren, Great Tit, Blue Tit, Pied Wagtail, Meadow Pipit, Hedge Sparrow, Bullfinch, Greenfinch, Lesser Redpoll, Linnet, Chaffinch, House Sparrow, Bunting, Yellowhammer, Starling, Jackdaw, Rook, Carrion Crow, Tree Creeper, Skylark, Ring Dove, Tawny Owl, Pheasant, Partridge, Heron, Lapwing, Moor-hen, and Wild Duck. A number of nests were also observed, including one of a Willow Warbler, built in a spruce fir two feet from the ground—an unusual situation. Mr. W. Wox showed living specimens of the Common Lizard (*Zootoca vivipara*), and of two forms of the Viper (*Pelias berus*), one being the ordinary dark-red form so well known, and the other the very handsome whitish form with black markings. He also showed a living example of the Whiskered Bat (*Vespertilio mystacinus*).

Mr. J. Darker Butterell reported for the Conchological section that there had been found about Kildwick Percy and Pocklington, six slugs, six water shells, and 13 land shells—making the total number 25. The slugs were—*Arion ater*, *A. hortensis*, *Limax agrestis*, *L. levis*, *L. maximus*, and *L. flavus* (reported by Mr. Steels) ; the water shells were *Anodonta cygnea* (abundant in the lake at Kildwick Percy), *Pisidium pusillum*, *Planorbis albus*, *P. complanatus*, *Limnæa peregra*, and *L. truncatula* ; and the land shells were *Zonites nitidulus*, *Z. alliarius*, *Helix aspersa*, *H. nemoralis*, *H. hortensis*, *H. cantiana*, *H. hispida*, *H. rotundata*, *Bulimus obscurus*, *Clausilia rugosa*, *C. laminata*, *Zua lubrica*, and *Carychium minimum*.

The Entomological section being quite unrepresented, no report was presented, but several insects of various orders were seen. Several beetles were collected, and the caterpillars of *Abraxas grossulariata* noted, but the only moth boxed was a specimen of *Hydrocampa stagnalis*.

The secretary of the Botanical section, Mr. P. F. Lee, of Dewsbury, reported the results of the investigations in that branch of science at Warter and at Kildwick Percy. Owing to the very unfavourable state of the weather, the ground covered was only of a limited extent. The botanists felt inclined to have 'words' with the Meteorological Department at this, because they had anticipated some virgin hunting ground, and were eager for the fray. Doubtless many good plants might be found on the gentle slopes and in the ramifying dales leading to the higher ground of this fringe of the wolds. As it was, 161 flowering plants and ferns were observed, the best of these being, *Geum intermedium*, *Berberis vulgaris*, *Geranium pratense*, *Viola hirta*, *Poterium sanguisorba*, *Origanum vulgare*, *Cornus sanguinea*, *Carex hirta*, the tall Fescue grass, *Festuca elatior*, and *Equisetum maximum*. Mr. H. T. Soppitt reported that the principal finds among fungi were *Amanita ceciliæ* B.&Br., *Stropharia melaspermus* Bull., and *Pholiota præcox* P., besides various commoner species.

For the Geological section its secretary, Mr. S. A. Adamson, F.G.S., of Leeds, reported. He stated that the members started from Nunburnholme Station, where they were received by the president of the section (the Rev. E. Maule Cole, M.A., Vicar of Wetwang). The rev. gentleman was, unfortunately, suffering from the effects of a recent accident, which hindered him from carrying out the whole of the programme he had originally intended. In addition to this disadvantage, a heavy and incessant rain fell, which rendered the ground difficult for walking, and obscured the prospect. In spite of this the party set out in the direction of Warter, passing over the post-glacial chalk gravels, so extensive at the foot of the Wolds. On entering the grounds of Warter Priory, the seat of Mr. C. H. Wilson, M.P.,

who had generously given free access to his beautiful estate, search was made in the bed of the small stream for the Rhœtic Beds (the connecting link between the Lias and the Trias) but without success, probably on account of the shallowness of the section. On ascending the hill near the mansion, the Red Chalk was observed to crop out. This was most interesting as Mr. Cole pointed out, it extends in a long sinuous line from Speeton, then along the north side of the Wolds to Acklam Brow, turning then southwardly to Brough, and through Lincolnshire to Hunstanton in Norfolk, where it entirely disappears. Mr. Cole also showed from a large map on which he had laid down his own observations, that the Red Chalk also crops out in the dales of the Wolds, wherever the overlying White Chalk has been cut through by denudation; it can also be traced by the springs which issue from its junction with the underlying clays, whether Lias, Oxford, Kimmeridge, or Neocomian. The question was asked of Mr. Cole as to the deep red colour of this bed in such marked contrast to the White Chalk above, but beyond stating that it was due to the presence of oxide of iron, it was a matter of much conjecture to say at present how it was introduced. The rain was now so exceptionally heavy that an agreeable change was made, and temporary shelter obtained by visiting the extensive vineries, ferneries, and grottoes connected with the mansion. Mr. Cole now led the way to the famous section in the Warter brickyard, mentioned by Messrs. Tate and Blake in their great work on the 'Yorkshire Lias.' Here, although somewhat obscured by slips, were seen *in situ* Grey and White Chalk, succeeded below by the Red Chalk and again beneath by lower Lias beds of the zone of Ammonites Bucklandi. The fact of the entire absence of the great series of Oolitic beds between the Red Chalk and the lower Lias at this point tends to the belief that they were denuded before the deposition of the chalk, this view receiving further corroboration from the fact that at a little distance to the north, both near Millington, and at Kirkby Underdale and Acklam, small patches of Oolitic deposits remain. Harrison, however, attributes this effect to overlap. Characteristic fossils of the lower Lias, such as *Belemnites acutus* and *Gryphœa incurva*, were here obtained in abundance. The effect of several hours' exposure to the rain now rendered it unwise to pursue geological research any further for the present, and the way was now taken reluctantly to Pocklington.

A vote of thanks to Mr. Fowler for his services in the chair concluded the meeting, and about half-past five all the members left by train.

ZOOLOGICAL NOTE.

Note on Spongilla, etc.—During an excursion of the Chester Society of Natural Science to Eaton Gardens and Serpentine on Thursday, the 2nd July, some of the members found Spongilla in great abundance, growing on the roots of the trees in the Serpentine. Some of the young specimens brought home proved very interesting, showing the osculum and the circulation very plainly. After keeping one specimen in a large cell for several days, I noticed the sponge studded *thickly* with ovoid sacks of different sizes, the larger ones pushing their way to the surface, and after watching them for some time, saw one swim away from its parent, the movement being rapid for some time, it then remained stationary for a time, and started again to swim about.

Several have now (12th July) attached themselves to the cell and dead stick, and others are still moving about in the water. The oval bodies are about one-third full of granular cells, possibly yolk cells, the remainder has a semi-transparent appearance. Those attached are now full of granular cells, and if supplied with the necessaries of life, will doubtless develop into the parent form. I have often watched the circulation in spongilla, but have never before seen its development, and would advise your readers, who may have more leisure time than I have, to watch more closely its curious and interesting mode of growth.

We also found two species of polyzoa, *Fredericella sultana* and *Alcyonella fungosa*, and the rare worm which has, I understand, been named *Pteridonais* by Dr. Ray Lankester, and a good collection of rotifers and infusoria. It is ten or twelve years since I first found *Pteridonais* in the canal, and those who have seen it call it the 'Polite Worm,' owing to its constant nodding, and flapping of its wings.—THOMAS SHEPHEARD, Kingsley Lodge, Chester, 12th July, 1885.

BOOK NOTICE.

The Birds of Lancashire.—By F. S. Mitchell, M.B.O.U. Illustrated by J. G. Keulemans, Victor Prout, &c. London: John Van Voorst. 1885.

A book on the avifauna of a maritime county of North-Western England or of Wales has long been a desideratum among our faunal works, and it is somewhat singular that the counties from the Bristol Channel to the Solway Firth have so long lacked histories of their bird life. Thanks, however, to Mr. Mitchell, the County Palatine no longer lies under the stigma of being behind the times in this respect, and it is to be sincerely congratulated in possessing an ornithologist of his high standard to undertake so important a work for a county which occupies such an interesting geographical position. The book has been worked out upon the lines on which a modern faunal work should be modelled, and its plan has been carried out with commendable thoroughness. The author has devoted many years to the study of the birds of the county wherein he resides, and in addition to his own great knowledge of his favourite subject, he has laid under contribution the whole of the bibliographical matter relating to it—no small task. The result is a book in every way worthy of its author and of the great county, and one that will take the highest rank among works of its kind. From the introductory remarks we learn that the avifauna of Lancashire comprises 250 species, of which 85 are residents, 31 summer visitants, 65 winter visitants, and 75 occasional visitants. In addition to general information as to distribution and relative abundance, concerning each of these species, much interesting information is given on the breeding habits, times of appearance, and local names—the experience of the author; also figures and descriptions of the Lancashire decoys, and of the various engines and schemes in vogue in the county for the capture of its feathered denizens. A map of Lancashire is given, and coloured plates of the Wall Creeper and the Black-throated Wheatear—Lancashire rarities—drawn by Mr. J. G. Keulemans, the celebrated bird-artist, add much to the attractiveness of the book. As it is a book in which we ourselves are much interested, we hope shortly to return to its consideration in these pages.

NOTES AND NEWS.

We are pleased to note that the Rev. W. W. Fowler, M.A., F.L.S., of Lincoln, has joined the editorial staff of the *Entomologists' Monthly Magazine*, thus filling the vacancy left by the lamented early decease of Mr. E. C. Rye.

The eleventh annual report of the Leeds Geological Association, presented to the annual meeting at the end of June, shows that the Association is in a most flourishing state. The members generally have taken more interest in its various operations, resulting in mutual benefit and advancement of the science the Association exclusively pursues. The membership shows a substantial increase, and the papers read during the past year have been of a high standard. Field work is strictly necessary for the life of any geological association; if this branch is neglected, the members gain no practical experience of the manifold operations of nature, they lose their interest in the science, and retrogression at once commences. This has not been the case with the Leeds Association; the field excursions have been numerous, the localities varied and most carefully chosen, whilst the leaders have been able and practical. Such efforts have had their merited success, the attendance at both meetings and excursions being much greater than for many years past; the largest average, we believe, in the history of the Association. We are glad to say that the Association has now become known outside local limits, and occupies an honourable position amongst the geological societies in the provinces. At the annual meeting the following gentlemen were elected as the executive for the year 1885-6:—President, Mr. T. W. Bell (re-elected); vice-presidents, Messrs. W. Cheetham, B. Holgate, F.G.S., C. D. Hardcastle, and T. H. Gray; hon. treasurer, J. H. Bromley (re-elected); Council, Professor A. H. Green, M.A., F.G.S., and Messrs. J. H. Monckman, D.Sc., J. E. Bedford, W. Hodgson Gill, and C. Brownridge; and Mr. S. A. Adamson, F.G.S., to whom much of the recent success of the Association is due, was re-elected as hon. secretary.

Naturalist,

It gives us pleasure to record the formation of a second naturalists' society in Lincolnshire—this time at Alford. Mr. James Eardley Mason is the president, and the society numbers about 26 members. The chief subjects taken up so far are botany, lepidoptera, and hemiptera-heteroptera. The society was established on the 10th February, and on the 8th of May an inaugural meeting, to which the public were admitted, was held. The Rev. Wm. Fowler, M.A., an ex-president of the Yorkshire Naturalists' Union, and himself an old Lincolnshire man, addressed the meeting upon the aims and work of naturalists' societies, and the benefits derivable from them. He had previously conducted a botanical party through Well Vale and the adjacent woods. We heartily wish prosperity to the Society, and hope to see the example of Louth and Alford followed in other parts of the county.

A meeting of naturalists was held at Liverpool on the 14th of March, to consider a scheme for investigating the fauna and flora and the marine biology of Liverpool Bay and the neighbouring seas. Professor Milnes Marshall and Mr. R. D. Darbishire attended from Manchester. Professor Herdman, who described the scheme, said it would form, if carefully carried out, a contribution of permanent value to the still unwritten fauna of the British Islands. It would be of importance in connection with various questions of the geographical distribution of animals, and it would result in the accumulation of a mass of observations in regard to the variations of animals, the exact conditions under which they live, their life histories, and their habits. The locality to be investigated might at first be limited by lines drawn west from Southport and north from the Great Ormes Head, and that would include the rich hunting ground of the marine zoologist, Hilbre Island, and ought to prove peculiarly interesting on account of the mixture of fresh and salt water in the estuary, and of the presence of semi-artificial conditions produced by the proximity of large towns and the abundance of steamer traffic. The locality might later on be extended so as to include the large area extending out to Anglesey and the Isle of Man ; and if the Dublin naturalists would undertake to work up in a similar manner the sea on the western side of the Isle of Man, then a complete series of investigations would be established, stretching right across the Irish Sea from land to land—a result of considerable scientific importance. It was decided to carry out the scheme, the arrangement of the practical details being left in the hands of Professor Herdman and a small committee of naturalists.

The Liverpool Marine Zoology Committee had its first considerable dredging expedition during the last week in May. During a three days' excursion in the gunboat Hyæna, the party made several hauls off Llandudno and the coast of Anglesey, north of Puffin Island, in the Menai Straits—opposite Bangor, and in Red Wharf Bay, and secured a large number of interesting specimens. The committee, which in its practical operations is mainly directed by Professor Herdman, of University College, Liverpool, hope to have a single-day expedition shortly. The greater part of Liverpool Bay can be satisfactorily investigated by a series of Saturday expeditions ; but for such outlying districts as the coast of North Wales, the cruise must extend over two or more days, in order that a sufficient time may be given to the dredging operations.

The month of June witnessed the completion of *the* standard work in an important section of the British fauna, the fourth edition of Yarrell's 'British Birds.' Commenced in 1871 under the editorship of Professor Newton, who revised it to the end of the second volume in 1882, it then passed into the hands of Mr. Howard Saunders, who quickly brought it to a conclusion in two additional volumes. Since the last edition (the third, issued in 1856), ornithology has made wonderful progress ; and the task of modernising the Yarrell of old has been indeed no light one, and has practically necessitated the book being written *de novo*. The two volumes produced by Professor Newton leave small room for criticism, being, as they are, from the pen of one pre-eminently qualified to deal with the subject, while Mr. Saunders on his part has not only amply sustained, but has added to his own ornithological reputation by the able manner in which he has brought the work to a completion.

METEOROLOGICAL RETURNS FOR MAY 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

Name of Station; its height above sea-level; and Name of Observer.	Atmospheric pressure. Mean Height of Barometer (reduced to zero and to sea-level).	TEMPERATURE (IN SHADE). Mean Temperature for Month.	Extremes. Highest Maximum registered. Amount.	Highest Maximum registered. Date.	Lowest Minimum registered. Amount.	Lowest Minimum registered. Date.	RAINFALL. Total Rain Collected.	Number of Days on which there fell 0·01 inch or more.	Greatest Fall in a Single Day. Amount.	Greatest Fall in a Single Day. Date.
ISLE OF MAN:	inch	deg.	deg.		deg.		inch		inch	
Cronkbourne (140 ft.) .... A. W. Moore, F.M.S.	29·738	46·88	59·3	31st	32·6	7th	2·228	19	0·53	23rd
W. COAST: Silloth, Cumb. (28 ft.) .. Rev. F. Redford, M.A. ..	29·722	46·70	63·6	28th	29·5	7th	1·713	20	0·485	1st
Barrow-in-Furness (—) .. W. S. Whitworth	29·737	47·80	59·0	27th, 28th	35·0	7th	1·690	16	0·620	20th
Liverpool (Bidston) (—) J. Hartnup, jun.	29·760	48·60	65·0	27th	38·0	7th, 8th	1·320	19	0·20	20th
CENTRAL HILL REG.: Newton-Reigny (Penrith) (577 ft.) T. G. Benn, F.M.S.	29·741	44·60	61·7	28th	27·8	7th	2·52	27	0·41	1st
Hawes Junction (1,135 ft.) Station-master	*28·520	42·10	61·0	28th	26·0	7th	4·65	26	0·49	1st
Stonyhurst (381 ft.) ..... Rev. S. J. Perry, F.R.S.	29·784	55·70	65·7	28th	27·2	13th	2·097	21	0·35	15th
EASTERN LOWLAND REGION: North Shields (—) ... J. W. Irvine	29·715	45·90	66·0	28th	32·0	7th, 8th	2·140	22	0·30	20th
Scarborough (120 ft.) .... Allan Rowntree, F.M.S.	29·718	47·15	71·0	28th	35·5	12th	1·93	19	0·44	3rd
York Museum (—) ..... The Curator	29·748	47·80	72·0	28th	30·0	7th	2·46	19	0·42	20th
Moortown, Leeds (500 ft.) G. Paul, F.G.S., F.M.S.	29·749	45·40	66·8	28th	30·6	12th	2·62	20	0·41	3rd
Hull, Derringham (10 ft.) Wm. Lawton.....	29·810	47·10	76·5	28th	30·0	12th	1·85	20	0·50	7th
Spurn Point (19 ft.)..... J. B. Smith	29·734	47·50	71·0	28th	36·0	8th	1·50	18	0·23	23rd
Louth, Lincs. (111 ft.).... T. W. Wallis.....	29·760	48·74	78·0	28th	32·0	8th	1·61	22	0·20	17th
Boston, Lincs. (24 ft.).... W. H. Wheeler, M.In.C.E.	29·760	49·50	73·0	28th	32·0	8th	1·67	19	0·32	5th
Loughborough (—) ..... W. Berridge, F.M.S.....	29·775	48·80	71·0	28th	31·0	7th	1·87	20	0·30	23rd
London	29·803	50·5	72·0	28th	32·0	8th	2·27	17	0·41	21st

* Not reduced to sea-level.

Wind.—1st Division (Isle of Man) N.E. 9, E. 3, S.E. 2, S. 11, S.W. 6, W. 15, N.W. 9, calm 7 times. 2nd Division mean direction N.E. 3, E. 2, S.E. 4, S. 4, S.W. 2, W. 6, N.W. 6, calm 4 days. 3rd Division mean direction N.E. 4, E. 3, S.E. 1, S. 3, S.W. 6, W. 5, N.W. 6, calm 2 days. 4th Division mean direction N.E. 2, E. 2½, S.E. 2, S. 3½, S.W. 3¾, W. 6, N.W. 5, calm 6 days.

Gales.—1st Division, on 4 days; 2nd Division, 3 days; 3rd Division, 3 days; 4th Division, 12 days; London, none.

Snow.—Isle of Man, on 10th; Silloth, 5th, 6th, and 7th; Newton-Reigny, 6th, 7th, and 11th; Hawes, 6 days; North Shields, 1 day; Hull, on 7th, yielding 0·5 inch in rain gauge in about 90 minutes; Spurn, 1 day; Boston, on 10th; and Loughborough, 1 day.

Bright Sunshine.—Isle of Man, 197·1 hours; Silloth, 149½ hours; Newton-Reigny, 153·3 hours; Stonyhurst, 153 hours; and Hull, 135·8 hours.

Highest Temperature in Sun.—Isle of Man, 125·7° on 31st; Silloth, 124·5° on 25th; Newton-Reigny, 125·2° on 28th; Stonyhurst, 129·2° on 30th; Leeds, 128·0° on 28th; and Hull, 96·0° on 28th.

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Contents:

PAGE

Micro-Palæontology of Northern Carboniferous Shales—*G. R. Vine* .. .. ..313 to 320
(V. Upper Carboniferous Shales, Northumberland Yoredale: Fourstones, 'Inghoe,' Lowick. Polyzoa and Entomostraca).

Coleoptera of the Liverpool District: (PART VI.—LAMELLICORNIA) .. .. ..322 to 325
John W. Ellis, L.R.C.P., &c.

Luminous Wood—*Charles T. Musson* 326, 327

Ornithological Note:— 336
Little Owls in Yorkshire—*Joseph Whitaker, F.Z.S., M.B.O.U.*

Conchological Notes:— 320, 321
Occurrence of Limax cinereo-niger in Washburndale—*W. Denison Roebuck, F.L.S.*; Achatina acicula at Knottingley—*R. D. Darbishire, B.A., F.G.S.*; Achatina acicula—*T. D. A. Cockerell*; Achatina acicula and its occurrence near Wakefield—*Geo. Roberts*; Amalia gagates in Notts.—*W. Gain.*

Botanical Notes:— 320
Lathræa squamaria near Dewsbury—*C. P. Hobkirk, F.L.S.*; Elder growing upon a Willow—*H. Wallis Kew.*

Book Notice:— 328
(Jeffrey Bell's Comparative Anatomy and Physiology).

Notes and News 328, 329

Meteorological Returns for June 1885—(Edited by *Geo. Paul, F.G.S., F.R.Met.S.*) .. 330

Bibliography of 1884: (PART VI.—PHANEROGAMIC BOTANY) .. ..331 to 336

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Presidential Address and Report of the Malton Field Naturalists' Society for 1884-5. [W. H. Hudleston.
Transactions of the Cumberland and Westmoreland Assoc. for 1883-4 (No. ix.). [The Association.
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Whitby Philos. Society—59th and 62nd Reports. [The Society.
Synopsis of the Contents of the Whitby Museum—1881—8 pp. [The Society.
Midland Naturalist for August 1885. [The Editors.
The Young Naturalist for August 1885. [J. E. Robson, Editor.
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MICRO-PALÆONTOLOGY OF THE NORTHERN CARBONIFEROUS SHALES.

By GEORGE R. VINE,

Attercliffe, Sheffield; *Secretary of the British Association Committee on Fossil Polyzoa.*

(Continued from page 210.)

V.—UPPER CARBONIFEROUS SHALES, NORTHUMBERLAND YOREDALE: FOURSTONES, 'INGHOE,' LOWICK. POLYZOA AND ENTOMOSTRACA.

In following out the plan adopted by Mr. H. B. Brady in his valuable monograph on the Carboniferous and Permian Foraminifera, it must not be supposed that I have in these papers anything special to present on the geology of the Northumbrian Shales. In the monograph, when speaking of the distribution of English and Welsh species of Foraminifera, Mr. Brady divides the Carboniferous Limestone series of the northern counties into Scar and Yoredale rocks. In the first group of these northern rocks—the Scar series—the species already described in my first four papers are located, and I have purposely presented the micro-organisms of these beds in consecutive order, so that they may be the more conveniently studied. The series of organisms now to be considered belong to a much higher group of rocks, separated from the others by the four-fathom and Great Limestone. In the Shales overlying the Great Limestone the first material of my present list has been derived. The Ingoe grits are situated in the Little Limestone series, and over these we come to the Lowick position.

In the masterly address (Feb. 18th, 1881. Quart. Journ. Geol. Soc., same year, p. 177) of Mr. Robert Etheridge, F.R.S., as President of the Geological Society, he makes references to the lie of the rocks, and gives the following stages of the Carboniferous series in the North of England and in Central Scotland:—'The comparison of the Northumberland, Durham, Yorkshire, and Lancashire rocks among themselves, and further correlation with the Scotch series, has yet to be effected. . . . . In the Pendle and Clitheroe area the Yoredale rocks are of great thickness, 3,000—4,000 feet; they are scarcely represented in Scotland, although so near; whilst the great or "Scaur Limestone" of Derbyshire is represented in Northumberland. The probable arrangement and agreement of the North of England and Central Scottish stages have been arranged or correlated by Mr. Hall, through a tacit agreement with Professor Geikie and Professor Lebour, both on stratigraphical and palæontological grounds.

The stages are as follows :—

Stages. North of England.	Stages. Central Scotland.
E. Gannister Beds.	**E.** Slaty-black-band series.
D. Millstone Grit.	**D.** Moorstone Rock series.
C. Flagstones and Shales.	**C.** Upper Limestone series (Yoredale Beds). Lower Coal and Ironstone series.
B. Scaur-Limestone Series.	**B.** Lower Limestone series.
A. 'Tuedian' sometimes absent.	**A.** Calciferous Sandstone series.'

At the time Mr. Etheridge wrote his address and gave the census of species, the Polyzoa of the Northern Shales had not been well worked, but a goodly list of species found in the Scotch Shales had been presented to the notice of palæontologists by Mr. Young and others. Mr. Etheridge (op. cit. p. 185) says that '77 species of Bryozoa range through the three lower horizons of the Carboniferous series (A, B, C), 74 belong to the true Carboniferous Limestone, 28 to the Lower Limestone Shales and Lower Limestones, and 4 to the Calciferous series, *not a single species passes to or occurs in the Yoredale* (the italics are mine.—G. R. V.) Millstone Grit or either one of the three divisions of the coal measures.' I have not the least doubt but that Mr. Etheridge is quite prepared to qualify these remarks, especially so as he said that the above census was given as stated by authors, but waiting special revision by myself and Mr. G. W. Shrubsole.

The Polyzoa of these Yoredale rocks are not abundant on the Northumbrian or Eastern side of England, but on the Western or Lancashire side the species rival in abundance—though not abundance of individuals—the Lower Limestone series of Scotland, and in giving the localities of the species now described, I only refer to published lists. The Yoredale species from the Western side of England I possess through the kindness of Mr. J. W. Kirkby, and these will be studied for a special memoir on Yoredale Polyzoa.

Sub-order CYCLOSTOMATA Busk.

See p. 62 (Naturalist).

Fam. *FENESTELLIDÆ*.

Genus FENESTELLA Miller and Lonsdale.

See *ante*, Naturalist, p. 62.

1 **Fenestella nodulosa** Phill.

Geol. Yorks., pl. 1., figs. 31-33, G. W. Shrubsole, Quart. Journ. Geol. Soc., May 1879, May 1880.

There are only two or three very poor fragments of *Fenestella—F. nodulosa* (?) Phillips—and with these are associated a few examples

of *Palæocoryne radiatum* Duncan and Jenk. and *P. scoticum* Duncan and Jenk.; and as Mr. G. W. Shrubsole (Quart. Journ. Geol. Soc., May 1881, p. 184) limits Palæocoryne to *F. nodulosa*, we have a double indication of the presence of this species.

Localities.—YOREDALE: Fourstones, Ingoe, Northumberland; Hurst, Yorkshire.

Genus PINNATOPORA Vine.

(See Naturalist, *ante*, p. 62).

2 **Pinnatopora flexicarinata** Young and Young.

1875. = *Glauconome* id. Young and Young, Proc. Nat. Hist. Soc. Glasgow, pl. ii., fig. 1-7, March.

1884. = *Pinnatopora* id. Vine, Naturalist, p. 64.

Fragments of this beautiful species are present in these Upper Shales, but the cells are either obscured by foreign matter, or the specimens are partly crystallised, and under these circumstances it is difficult to trace the whole of the characters. In one or two fragments, however, all the characters are clearly traceable, (1) The alternate lanceolate oval cells; (2) the broad tuberculated mesial ridge; (3) the tuberculated peristome of the cells; and (4) the beautiful longitudinal striæ on the reverse. Although not so perfect in the ornamentation as the Hairmyres examples, still the chief distinguishing features are present, and are truly indicative of the normal type.

Localities, &c.—YOREDALE: Fourstones, Lowick, Northumberland; Hurst, Yorkshire.

3 (?) **Pinnatopora aspera** Young and Young.

1875. = *Glauconome* id. Young and Young, Proc. Nat. Hist. Soc. Glasgow, pl. iii., figs. 23, 24.

1881. = *Glauconome* id. Vine, Proc. Geol. and Polytec. Soc. Yorks., Vol. VII., pl. xvi., fig. 3.

Very small but characteristic specimens of this species are also present in the Northumbrian Shales, and though most of the fragments are far from perfect, still we can speak of them as identical with those of the Yorkshire Shales at least. None of the examples show the mode of branching or the twist of the stem, as in the Scotch fragments.

Localities.—YOREDALE: Fourstones, Ingoe Shales, Northumberland; Hurst, Yorkshire (Vine); Scotland, Hairmyres (J. Young), Lower Carboniferous Shales.

4 (?) **Pinnatopora laxa** Young and Young.

1875. = *Glauconome laxa* Young and Young, Proc. Nat. Hist. Soc. Glasgow, pl. iv., figs. 3, 4.

= *? G. elegantula* (?) Etheridge, jun. *(fide* Young*)*.

There are a few very poor specimens of a species that I cannot place under any other name than this. The prominent keel is seen in some of the fragments, and the two pores between the pinnæ as in the Scotch form, otherwise it is so dwarfed as to be scarcely comparable with the poorest specimens even, of those from Hairmyres.

Localities.—YOREDALE: Fourstones, Northumberland.

Fam. *DIPLOPORIDÆ* Vine.
1884 (see Naturalist, *ante*, p. 63).
Genus ACANTHOPORA Young and Young.

5 **Acanthopora stellipora** Young and Young.
1874 = *Glauconome* id., Quart. Journ. Geol. Soc. (Dec.), p. 682.
1882 = „ „ Vine, Proc. Geol. Polyt. Soc. Yorkshire, vol. vii.

6 **Acanthopora stellipora** Young and Young. Var. **a. spinosa** Young and Young.
Proc. Glas. Nat. Soc., March 1875, pl. iv., figs. 25-26.
Quart. Journ. Geol. Soc., 1874, p. 682, pl. xl., figs. 9-11.

Both the species and the variety are present in these Shales, but, like the rest of the Polyzoa, fragments very poor.

Localities.—YOREDALE: Fourstones, Ingoe, Northumberland; Hurst, Yorkshire. Limestone Shales, Hairmyres; Upper ditto, Gare; Boghead.

Genus DIPLOPORA Young and Young.

7 **Diplopora marginalis** Young and Young.
1875. = *Glauconome* (Diplopora) *marginalis* Young and Young.
1882. = *G. marginalis* Vine, Proc. Geol. and Polyt. Soc. Yorkshire, p. 333.
1884. = *Diplopora marginalis* Vine, Naturalist, *ante*, p. 208.

A few fragments, rather better preserved than specimens previously referred to; but it is very rare in these Northumbrian Shales, though not so rare in the Yorkshire.

Localities.—YOREDALE: Fourstones; Hurst and Richmond, Yorkshire. Limestone Shales, Boghead; Hairmyres, Gillfoot, Scotland; Hook Point, Ireland; Halken, Wales.

Fam. ———————— ?
Genus HYPHASMOPORA Etheridge, jun.

8 **Hyphasmopora Buskii** R. Etheridge, jun. (Naturalist, p. 64.)

Only in the Ingoe Shales have I detected fragments of this very characteristic species.

Localities.—YOREDALE: Ingoe Shales, Northumberland; Hurst and Richmond, Yorkshire. SCAUR LIMESTONE, Redesdale, Northumberland. Scotland, Hairmyres, High Blantyre; and several other localities not as yet catalogued.

Sub-order **CRYPTOSTOMATA** Vine.

(Naturalist, *ante*, p. 65.)

Genus CYSTODYCTYA Ulrich.

9 **Cystodictya parallela** Phill. sp.

Flustra id. Phill.

I have only found a single fragment of this widely-distributed species in the Yoredale Shales of Northumberland.

Localities.—YOREDALE: Fourstones; Hurst, Yorkshire. Limestone Shales, Scotland, rather widely distributed, Hairmyres, Gare, Beith, &c. Carboniferous series of America (Ulrich).

Fam. *RHABDOMESONTIDÆ* Vine.

(Naturalist, *ante*, p. 66.)

Genus RHABDOMESON Young and Young.

10 **Rhabdomeson gracile** Phillips sp. (*Millepora* Phill.)

11 **Rhabdomeson rhombiferum** Phill. sp. (*Ceriopora* id.)

Fragments of these species are more abundant than any of the other species referred to in the above list, and as the characters are so well marked there is but little fear that the forms can be mistaken.

Localities.—YOREDALE: Fourstones, Ingoe, Northumberland; Hurst, Richmond, Yorkshire. SCAUR LIMESTONE, Redesdale, Skelly Gate, Northumberland. Widely-distributed Devonian (Pilton.) Carboniferous Limestone and Shales, England—Wales—Scotland.

Genus PALÆOCORYNE Duncan and Jenkins.

12 **Palæocoryne radiatum** Duncan and Jenkins.

13 **Palæocoryne scoticum** Duncan and Jenkins.

Specimens of both these are very fine in the localities given.

Localities.—YOREDALE: Fourstones, Ingoe, Northumberland; Hurst, Richmond, Yorkshire. SCAUR LIMESTONE, Redesdale (? Haltwhistle, by Mr. Howchin, very fine).

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14 **Polypora?** Sp.

Two fragments, but altogether different from the Lower Carboniferous Shales form.

Locality.—YOREDALE: Fourstones.

The above list, though a poor one, will serve to show to the Palæontologist the character of the Polyzoal remains in the Upper,

or Yoredale Shales, of the Carboniferous series of Northumberland. It may be that my material was too poor to yield a fairly representative series; if so, the local student is now in a position to add to the above, if he sets to work in earnest, and no one will be better pleased than myself to hear of the results. Mr. Howchin, however, when he sent me the material, assured me that I had a fairly representative series of shale-washings, so far as he was able to procure them. Since his time many new localities may have been opened up, and I have not the least doubt but that specimens from many of these new localities may be in the cabinets of Professor Lebour and others, if so, I should like to hear about them. It would give me great pleasure to go over any Northumbrian series, large or small, for the purpose of obtaining as full a list as possible. But with the exception of receiving one letter from Professor Lebour at the beginning of my present labours, no other interest seems to have been excited in the publication of papers on the Palæontology of the Northern Shales.

ENTOMOSTRACA.

(See Naturalist, pp. 97-101, 209-210.)

The Ostracoda of the Upper Shales are in much better preservation than the Polyzoa, and specimens seem to be fairly abundant. Some of the Shale-washings, especially those from Ingoe, are full of organisms, and the Entomostraca and Foraminifera are fairly abundant. I had two siftings of the Ingoe Shales from Mr. Howchin, but the most valuable for Foraminifera is the finest of these.

Fam. I. *CYPRIDÆ*.

1 **Bairdia Hisingeri** Munster, Var. **elongata** Jones and Kirkby (Naturalist, p. 98).

I have not found the true *B. Hisingeri* in these Upper Shales, and the elongate variety is very rare.

Localities.—YOREDALE: Fourstones, Ingoe, Northumberland; Hurst, Yorkshire.

2 **Bairdia subelongata** Jones and Kirkby (Naturalist, p. 99).

This also is a rare species in the Upper Carboniferous Shales of Northumberland. I have only two examples.

Localities.—YOREDALE: Ingoe, Northumberland; Hurst, Yorkshire.

3 **Bairdia plebeia** Reuss. (Naturalist, p. 99).

Jones and Kirkby, Quart. Journ. Geol. Soc., November 1879, pl. xxviii., figs. 9 to 19. (See fig. 13.)

The specimens vary a little in these Upper Shales. One of the Ingoe forms has surface ornamentation, as referred to by the authors

Naturalist,

of the above paper (fig. 15 of plate Craigenglen sp.). Ordinary specimens do not show the pitted surface.

Localities.—YOREDALE: Lowick (surface pitted), Ingoe (surface pitted, and also without), Fourstones (?), Northumberland; Hurst, Yorkshire.

4 **Bairdia ampla** Reuss.

Jones and Kirkby, Quart. Journ. Geol. Soc., Nov. 1879, pls. xxviii. and xxxii.

This species is rare in these Shales, but in comparing the forms with the Scotch examples, I cannot help placing it upon record.

Localities.—YOREDALE: Fourstones (?), Ingoe, Northumberland.

5 **Bairdia brevis** Jones and Kirkby. (Naturalist, p. 99.)

This seems to be the most abundant form in the Lowick Shales. I am rather doubtful of the specimens from the other Northumbrian localities.

Localities.—YOREDALE: Lowick, Northumberland; Hurst, Yorkshire (Redesdale, *ante*, p. 99).

Fam. *LEPERDITIADÆ.*

(See Naturalist, *ante*, p. 100.)

Genus LEPERDITIA Ronault.

6 **Leperditia okeni** Munster.

(For references see Naturalist as above.)

Only one perfect specimen and two or three fragments is all that I have found in the material of these Upper Shales.

Localities.—YOREDALE: Ingoe, Northumberland; Hurst, Yorkshire (Redesdale, *ante*, p. 100).

Genus KIRKBYA Jones.

7 **Kirkbya umbonata** D'Eichwald.

Jones and Kirkby, Palæozoic Bivalved Entomos., Ann. Mag. Nat. Hist., March 1885, p. 180.

In this recent publication of the authors, the whole of the *Kirkbyæ* are described, and the species are illustrated and restricted.

Localities.—YOREDALE: Lowick, Ingoe, Northumberland; Hurst, Yorkshire.

Other English localities given by the authors. Carb. Limestone series, Scremerston, Barmoor, Redhouse, Northumberland; Calees in Cumberland; Scar Limestone, Arnside, Westmoreland.

8 **Kirkbya permiana** Jones. (See Naturalist, *ante*, p. 100.)

Jones and Kirkby, Ann. Mag. Nat. Hist., March 1885, for synonyms and descriptions, pp. 177 and 178.

Only a fragment—one half of the bivalve—but with the usual and almost unmistakable reticulations.

Localities.—YOREDALE: Fourstones, Northumberland; Hurst, Yorkshire. Scar Limestone series, Redesdale.

These are the whole of the Entomostraca that I can thoroughly identify in these Upper Shales. There are a few other forms, but as these are not sufficiently characteristic for the purpose of identification, I think it far better for Palæontological science to hold them in abeyance than to load my text with a series of objectionable names.

I have now the Foraminifera and the miscellaneous organisms to refer to, and then—probably in one more article—I shall have completed the task to which I set myself.

(*To be continued.*)

BOTANICAL NOTES.

Lathræa squamaria near Dewsbury.—Whilst rambling along a lane between Dewsbury and Mirfield a week or more ago, I casually noticed a few white-looking tufts in a coppice, and on climbing over the wall was surprised to find some 30 or 40 flowering stems of this curious parasite in full bloom. I believe this is the first time the plant has been recorded for this part of the West Riding, and it may be noted that it was not growing on hazel, as the text-books usually give it, but on sycamore.—C. P. HOBKIRK, Dewsbury, 20th May, 1885.

Elder growing upon a Willow.—On 21st of March last I came across an example of an Elder growing upon a Willow, which, I think, is worthy of note. Near one of the by-washes of the canal here, stands a large and much-decayed Willow. As is usually the case, a quantity of rubbish has collected upon the decaying portion of the tree, and from this, about 4 feet from the ground, grows an Elder, with trunk of considerable size, and measuring in height about 8 feet. This Elder must have lived a long time upon the nourishment drawn from the decaying Willow and the rubbish collected thereon, though now one of the arms of its root (which has exceeded 4 feet in length) has found its way into the ground.—H. WALLIS KEW, Louth, 4th April, 1885.

CONCHOLOGICAL NOTES.

Occurrence of Limax cinereo-niger in Washburndale.—I have the pleasure of recording the occurrence of the tenth specimen yet known for Britain of this extremely rare slug. On the 5th of July, while with Mr. Clarke and Mr. R. Rosenstock in Washburndale, we came to the point where the Glaston Beck flows into Lindley Wood Reservoir. Here there were numerous planks lying on the ground, the remains of a dismantled building. Turning these over, we found slugs in great abundance, including *Limax agrestis* and its varieties, *Limax lævis*, *Arion ater* var. *rufa*, two or three *Limax maximus* var. *cellaria*, and the greatest treasure of all, a single, half-grown example of *L. cinereo-niger*. Its characters were unmistakable — the trifasciated foot, light keel-line and coarse rugosities amply sufficing to separate it from *L. maximus*. In another locality close by we found more slugs, and with them a large quantity of *Zonites fulvus*. The district is not usually a productive one for land shells, being underlaid by sandstones and shales of the millstone grit series.—W. DENISON ROEBUCK, Leeds, July 10th, 1885.

Achatina acicula at Knottingley.—Referring to Mr. Emmet's fine paper in the *Naturalist* of July, I am happy enough to bear testimony to the truth of his theory as to the occurrence of *A. acicula*. Being at Knottingley, I recollected and applied his hints, went to a likely place near the station, and immediately found the shell quite fresh, and in sufficient numbers not to be accidental, just as Mr. Emmet expected.—R. D. DARBISHIRE, Manchester, July 19th, 1885.

Achatina acicula.—Mr. Emmet, in his interesting paper, says that he is not aware of any variation from the typical form. Moquin Tandon, however, mentions one variety, *Hohenwarti* Rossm. (what a name !), distinguished by being much larger, rather ventricose, yellowish, with a rather large aperture. I believe others have been described under various names, but although I have examined countless numbers of British examples, I have not yet noticed any variety.

Mr. Emmet rejoices over the capture of a dozen specimens in the same number of inches. I wish he could have seen the haul I got of this species at Birchington, Kent, in 1883 ! The river Stour, or rather a branch of it, was my collector, the sea was my carrier, and there on the shore, at a point where the then prevailing winds had driven the floating refuse, were not dozens, nor hundreds, but thousands of *Achatinæ*. I did not need to pick them up one by one, I simply scooped them into my box, and having obtained a plenteous supply, went on my way rejoicing. With the *Achatinæ* were here and there specimens of *Melampus myosotis*, *Hydrobia ulvæ*, *Pupa marginata*, and other species.

Nor was this a solitary occurrence; my brother got a similar harvest of *A. acicula* in the St. Nicholas Marshes close by, derived probably from the same source, but, as they had not gone out to sea, in somewhat better condition.

It is asked, why does the *Achatina* bury itself? The only answer that suggests itself to me is that it so escapes the severe competition with other forms of life it would have to meet were it always above ground. The depths of the earth remained comparatively lifeless, and so our little *Achatina* became adapted to an easy though uninteresting mode of life, and so became less specialised than other forms, and is less prone to vary, simply because variation would be of little or no use to it.—T. D. A. Cockerell, 51, Woodstock Road, Bedford Park, London, July 1885.

Achatina acicula and its occurrence near Wakefield.—This shell, hitherto considered rare, has been found in abundance in a garden at Wakefield, within about 100 yards of one of the main streets, by Mr. J. Wilcock. On July 9th, 1885, I saw about 400 specimens, which had been collected within a small area. Many were dead and broken, but some were alive. The soil in which they are found is deep and light, and they occur about 5 in. or 6 in. below the surface. They were first noticed at this place in April, but others had been found at Newton, near Wakefield, on the roots of dandelion, some years before. As this locality is on the Carboniferous Sandstone, I should like to ask if the species has been recorded from other localities on the same formation. From Mr. Emmet's interesting article in last month's *Naturalist*, it appears to be abundant on the limestone, though living specimens seem to be very rare. I think the animal, with its very narrow and elongated shell, will have no difficulty in making its way through the sinuosities of loose earth or marl, when we consider that *Helix nemoralis*, with its shell an inch in diameter, can burrow into the earth, and if *Achatina acicula* is eyeless, it is not surprising that it should be subterranean in its habits. The shells of living or recently dead specimens are very shining, and look like delicate whorls of twisted glass. There is, however, in each of them a yellow speck, though the animal is of the colour of the shell. This dainty little mollusk may be enticed 'to come out of its shell' by placing the specimens on a dish of damp earth shaded from sunlight. I and Mr. Wilcock had half a dozen creeping about at one time. Many of the dead shells are perfectly empty, clear, and pellucid, so that when the animal is dead some minute insect or centipede must clear every particle out from the shell.—Geo. Roberts, Lofthouse, near Wakefield, July 13th, 1885.

Amalia gagates in Notts.—The variety *plumbea* of this species, kindly identified for me by Mr. Roebuck, occurs in tolerable abundance in my garden, 36 miles in a straight line from the nearest coast.—W. Gain, Tuxford, July 1885.

[It is interesting to find that this species occurs inland in Britain. The present record is additional to the fauna of Nottinghamshire, and I have during the present season received it from two other inland counties. Mr. Baker Hudson sent it to me from Oswestry, Shropshire, and the Rev. R. W. G. Smart from Bishopswood, Herefordshire.—W. D. R.]

COLEOPTERA OF THE LIVERPOOL DISTRICT.

By JOHN W. ELLIS, L.R.C.P., L.R.C.S.E.,
Liverpool; Hon. Sec. Lancashire and Cheshire Entomological Society.

PART VI.

LAMELLICORNIA.

(Read before the Lancashire and Cheshire Entomological Society, November 24th, 1884.)

The species of this group are distinguished from all other beetles by having the terminal joints of the antennæ more or less flattened and hinged together so as to open and shut like the leaves of a book. Though the group is represented in Britain by only about 90 species, the specimens are mostly conspicuous, and are consequently favourites with collectors. Many of them are onthophagus (feeders on dung), such as the genera *Geotrupes* and *Aphodius*, and of these I may point out that our district can scarcely be surpassed, if indeed it can be equalled, for the number of species, most of those I have recorded being inhabitants of the Wallasey sandhills, where they revel in the dung of the New Brighton donkeys. Of the whole 90 species recognised as British, I have to record just one half (45) as occurring or having occurred in our district, while of the genus *Aphodius*, comprising 44 British species, 28 occur with us.

LUCANIDÆ.

SINODENDRON, Fab.

S. cylindricum, L.

Mr. Archer records this species (probably in a decayed ash) from Childwall.

SCARABÆIDÆ.

ONTHOPHAGUS, Latr.

O. fracticornis, Preys.

Common on the sandhills, especially about Crosby.

APHODIUS, Ill.

A. subterraneus, L.

Common on the sandhills at Wallasey, in June.

A. fossor, L.

Abundant about Wallasey and Spital.

A. hæmorrhoidalis, L.

Frequent at Wallasey.

A. scybalarius, Fab.

Very abundant at Wallasey in spring, and very variable in colour.

A. fœtens, Fab.

Usually common on the sandhills in July.

A. fimetarius, L.

Abundant everywhere.

A. ater, De G.

Both the ordinary (black) and the dark red forms are abundant in sheep dung at Wallasey in summer.

A. granarius, L.

Frequent at Crosby and Wallasey.

A. sordidus, Fab.

Occasionally abounds at Wallasey.

A. rufescens, Fab.

Unusually abundant at Wallasey in July.

A. nitidulus, Fab.

Mr. Wilding has taken this species abundantly at Wallasey on several occasions.

A. plagiatus, L.

Common at Wallasey, rarely found in dung but usually buried in the sand under rejectamenta. The type form (with the bright red streak) occurs very rarely, probably only one per cent.

A. inquinatus, Fab.

One of the most abundant of the genus at Wallasey and Crosby in spring.

A. melanostictus, Schaum.

Of this very scarce species, first taken in Britain by Mr. Chappell, I have taken three specimens at Wallasey and Crosby. It much resembles a very suffused specimen of *inquinatus*, and for some time I had them in my collection as such.

A. conspurcatus, L.

Very abundant at Wallasey, and the first of the genus to appear in spring.

A. scrofa, Fab.

A very rare species, of which for many years the only veritable British specimen was one taken by Mr. Sidebotham, at Southport, about 1865 or 1866 (Ent. Monthly Mag., v. 100).

A. pusillus, Hbst.

Common on the Wallasey sandhills, and occasionally at Crosby.

A. merdarius, Fab.

A pretty and abundant species in June and July at Wallasey.

A. prodromus, Brahm.

Generally distributed, but more abundant away from the sea, as at Spital.

A. punctato-sulcatus, Sturm.

Abundant all over the district.

A. contaminatus, Herbst.

Occasionally common, but of irregular appearance, Wallasey, Bidston, &c., September.

A. obliteratus, Pz.

I once took several of this species in the dung of tame zebus at Spital, and could have probably taken more but that I believed them to be only *A. contaminatus*. October.

A. rufipes, L.

Very abundant everywhere. Mr. Wilding notices the fact that this insect is common at light.

A. luridus, F.

Crosby (F.A.); a single specimen from near Hale was brought to me many years ago.

A. depressus, Kug.

Wallasey, common (R.W.).

(OXYOMUS, Lap.)

A. sus, Herbst.

A single specimen at Wallasey (R.W.)

A. villosus, Gyll.

Mr. B. Cooke took a specimen of this scarce species on the sandhills at Southport, June 19th, 1858 (Ent. Mo. Mag., v. 44).

A. porcatus, Fab.

I have taken a few specimens of this species in dry dung on the Crosby shore.

PSAMMODIUS, Heer.

P. sulcicollis, Ill.

Of occasional occurrence on the Crosby sandhills.

ÆGIALIA, Latr.

Æ. sabuleti, Pk.

New Brighton, May 1863 (F.A.).

Æ. arenaria, F.

Very abundant on the sandhills in spring.

Æ. rufa, Fab.

A very scarce species, first taken in Britain by Mr. F. Archer at New Brighton, in June 1862, and recorded in the Liverpool Nat. Scrap-book, March 1864, p. 186. Mr. Wilding took two specimens in 1883 at Wallasey.

GEOTRUPES, Latr.

G. typhæus, L.

Mr. W. Gardner informs me he picked up a dead specimen of this species at Stourton.

G. stercorarius, L.

Abundant.

G. putridarius, Er.

Abundant.

G. sylvaticus, Pz.

Common about Eastham and Spital.

G. vernalis, L.

Occurs sparingly.

SERICA, MacL.

S. brunnea, L.

Generally distributed. West Derby (J.H.S.); Liscard and Wallasey (R.W.); Eastham, among bracken, and on the Hightown shore on several occasions (J.W.E.). I used to see this species flying in swarms round the gas lamps about Mossley Hill, and frequently netted them in mistake for Noctuæ.

MELOLONTHA, Fab.

M. vulgaris, Fab.

By no means abundant in our district.

PHYLLOPERTHA, Kirby.

P. horticola, L.

Eastham wood, tolerably common on mountain ash. In June 1883 it was very abundant on the flowers of *Rosa spinosissima* on the Wallasey sandhills, and Mr. Smedley was fortunate in taking a perfectly black specimen. Mr. Archer took a similar specimen at Rock Ferry, in June 1862.

ANOMALA, Sam.

A. frischii, Fab.

Common on the sandhills during summer.

CETONIA, Fab.

C. aurata, L.

The Rev. H. H. Higgins has seen this species in his garden at Rainhill.

C. stictica, L.

Mr. Sidebotham took two specimens, and Mr. Edleston, who was with him, took one, of this beautiful and exceedingly scarce British species on the flowers of *Rosa spinosissima* on the Lancashire coast, in July 1862 (Ent. Mo. Mag., i. 236).

LUMINOUS WOOD.

By CHARLES T. MUSSON,
Nottingham.

On September 16th, 1884, a member of our Nottingham Naturalists' Society (Mr. Scherffius) brought me some 'luminous wood,' obtained at Burton Joyce, near this town. It is part of a root of the common hawthorn, not having any appearance of decay, about 1½ inches thick originally (now split up into several pieces, and brilliantly luminous on the fresh split surfaces). It was obtained from a hedge that had been recently trimmed; the roots being exposed along the hedge bank for some distance, but only in one case presenting this curious phenomenon. It is tolerably common in the case of 'touch-wood,' many of my friends having observed it, as also in fish (said to be the result of decay); but so far as I can tell, it appears to be rare in wood that is sound (to all appearance). The luminosity is *only* seen on the split surfaces, and penetrates into the wood for one-eighth of an inch or slightly more. Chips were cut off that appeared like 'slices of moonlight.' The luminosity could be cut away until the dark and non-luminous wood was seen as black, against the pale bluish phosphorescent appearance of the illuminated portions. The wood was wet, and as long as it remained so the luminosity was strikingly brilliant (of course seen best in a dark room).

I extract the following from my journal:—

Sept. 17. Luminosity not so bright.
,, 18. Fainter than ever. Put some in a damp cloth for an hour, after which it had improved in brightness.
,, 20. Only just apparent.
,, 21. Soaked it in water for 1½ hours, and, on examination, the luminosity was as brilliant as when first obtained.
,, 22. Luminosity faint.
,, 23. To-day there are no traces of luminosity in the wood.
Oct. 4. Mr. Scherffius tells me the root from which it was taken is slightly luminous still—as it also was on October 8th, owing no doubt to the rain having kept it damp.

Pieces of the wood have been submitted to several gentlemen (Mr. W. B. Grove, of Birmingham; Messrs. G. B. and Charles L. Rothera, of Nottingham), the general impression being that the luminosity is due to the presence of fungoid threads, combined with the decomposition of the wood.

In an article in Encyc. Brit., 9th ed., p. 829, on Fungi, by George Murray, it says:—

'The phosphorescence or luminosity observed in several fungi depends on the respiration of oxygen. Those fungi which exhibit luminosity ceasing to do so when the oxygen is extracted.'

My friend, Mr. R. A. Rolfe, of Kew Gardens, writes me with reference to a piece I sent up for inspection:—

'Three summers ago, when at Colwick (Notts.), I came across a large luminous stump. On returning here I went to my colleague (Dr. M. C. Cooke) for advice. He told me the phenomenon had been frequently observed; that it was due to the mycelium of a fungus, probably a Polyporus, possibly to more than one species, but which no one appears to know.'

In the Gardeners' Chronicle, February 21st, 1882, vol. 13 (new series), p. 240, I find a note from the Rev. M. J. Berkeley, to the following effect:—He describes a new species, *Agaricus* (*Pleurotus*) *emerici*, from the Andaman Islands, and says, 'The only instances of luminosity which have occurred at home have been confined to mycelia, in conjunction with decaying wood or fermenting leaves.' He then says, 'In the case of the new agaric it is no question of decomposition, for the specimens are quite young and not fully grown. The pileus is about half an inch across, attached behind without any stem, either nearly flat or helmet shaped, the entire substance being luminous. The cause is at present, we believe, unknown; even the opportunity of examining the large olive tree agaric of the south of Europe has been without result. Next, I may say that my colleague, Mr. N. E. Brown, examined the wood microscopically, under a low power; the whole (a thin slice) appeared luminous or nearly so, and under a high one it was barely visible. The brilliancy to the naked eye would seem to be owing to concentration, as the magnifying process renders it almost invisible; he could not make out whether the light was from the wood, or from mycelium in the wood.'

Is the luminosity owing to the mycelium of a fungus? Or is it in the wood, and caused by the action of the mycelium of a fungus hastening decomposition? Or is the mycelium itself luminous; and if so, does it belong to one or more species, and what species does it belong to?

I think we may conclude that it is in some measure due to the presence of the mycelium of a fungus (possibly of several species). Further than that our knowledge at present will not take us.

References to articles on this subject:—Cooke's Fungi, p. 105; Berkeley's Introduction to Cryptogamic Botany, p. 265; Gardeners' Chronicle, 1872, p. 1258; Phosporescence (a work recently published); Science Gossip, 1871, p. 121.

Sept. 1885.

BOOK NOTICE.

Comparative Anatomy and Physiology.—By Professor Jeffrey Bell, M.A. London: Cassell and Co. 1885.

We are glad to see that Messrs. Cassell and Co. have just made a valuable addition to their admirable series of 'Manuals for Students of Medicine,' in the form of a concise treatise on Comparative Anatomy and Physiology, which has long been a desideratum with a certain class of students, and will be especially useful to candidates for the Fellowship of the Royal College of Surgeons.

Before proceeding to compare the morphology and physiology of the organs of different animals, the author devotes the first three chapters to a general introduction, and a useful and compact outline of the classification of the animal kingdom; the chief characteristics of the groups into which it has been divided being laid down on clear and simple lines. We notice, however, a few points in this part of the work which are perhaps open to comment, for instance, in the definition of the Mammalia, the 'malleus' is stated to be the homologue of the 'quadrate' of the avian and reptilian skulls. The author evidently still adheres to the views originally advanced by Huxley on this point, but the more recent investigations of Parker seem to support the Reichertian doctrine in showing that the representative of the quadrate in the mammalian skull is the 'incus.' The whole problem, however, is a difficult and puzzling one, and there are even some authorities (Albrecht and Dolto) who dissent from both the above explanations, and assert that the representative of the quadrate must not be looked for among the auditory ossicles at all. Again, in the classification of insects, we notice that the Dragon-flies still occupy their old position in the Neuroptera, which is perhaps somewhat old-fashioned, for according to recent classifications they should be located with the Orthoptera.

The remainder of the work is arranged upon what we might term 'physiological' lines—each chapter being devoted to some particular set of organs, having a *common function*. It is this part of the book which the student has been most in need of, and we can compliment the author on the judicious arrangement which has enabled him to pack away so much valuable information in such small compass. The physiological element may perhaps appear somewhat scanty as compared with the anatomical, but this is not surprising to those acquainted with the subject, and who are aware of the incompleteness of our knowledge of the vital processes in all but the highest animals; and the physiology of the human subject constitutes a separate volume of this series. Taking the work as a whole, it appears to be carefully and accurately done, and, with the exception of a few points such as those we quote, quite up to date. It is got up in excellent style throughout, and the illustrations—with which it is profusely illustrated—are mostly well chosen, and borrowed from standard authorities. The work fills a lacuna which has been conspicuous among scientific text-books, and we are sure that the students for whom it is written will give it a hearty welcome.—A. D.

NOTES AND NEWS.

At a recent meeting of the Manchester Cryptogamic Society were exhibited a number of mosses which had been received from Mr. Thomas Whitelegge, a former member of the Society, now an assistant curator at the Sydney Museum. Mr. Whitelegge has been actively engaged during the last year in investigating the cryptogamic flora of New South Wales, and has succeeded in discovering twenty-three species of mosses new to science. One each of the genera *Pilotrichum*, *Weissia*, *Campylopus*, *Bruchia*, and *Halomitrium*, have been named by Professor C. Müller in honour of the discoverer.

The fourteenth annual report of the Chester Society of Natural Science furnishes evidence of continued prosperity in a society which has never slackened work since its foundation in 1871. Reference is made to the new museum buildings, and to the preparation of a third part of the Proceedings, as well as to the numerous other outlets for the Society's activity which have been dealt with in previous years. Professor McKenny Hughes is again president, and most of the old officers are re-elected.

Among recent elections to the Fellowship of the Geological Society of London, we note the names of Messrs. W. Elliott Howe (Matlock Bath), Lees Knowles, M.A. (Pendlebury, near Manchester), James Backhouse (York), and James Shipman (Nottingham).

The forthcoming issue of an important new work on the Rotifera or Wheel Animalcules, from the pens of Messrs. C. T. Hudson and P. H. Gosse, is announced by Longmans and Co. In the thirty plates of coloured figures all the known British species and the more important foreign ones are to be figured.

The *Field* has lately given a list (with statistics) of Otter-hound packs in the British Isles—eleven in number. Of these four are in the North of England—viz., the Carlisle Otter-hounds, 15 couple; the West Cumberland, about 14 couple, with headquarters at Cockermouth; the Egremont, 10½ couple, with headquarters at Egremont, *via* Carnforth; and the Kendal, 12 couple, with headquarters at Fellside, near Kendal.

Yorkshire naturalists will learn with gratification that one of themselves—Mr. W. Percy Sladen, F.L.S., F.G.S., formerly of Halifax, so well known as a student of the echinoderms—was elected to the zoological secretaryship of the Linnean Society, in succession to Mr. G. J. Romanes, at the anniversary meeting held on the 11th of June. At the same time Lord Walsingham was elected a member of the council of the society.

A meeting was held at Macclesfield on the 6th of June for the purpose of reorganising the Macclesfield Scientific Students' Association, which was founded in 1880, to promote scientific study and research. The word 'Students'' was erased from the name of the association, and a revised code of rules was adopted. The subscription is limited to five shillings a year, and ladies are admitted on equal terms with gentlemen. Sections for the study of particular branches of science may be formed, and excursions are to be a distinctive feature of the society. Mr. John Potts, F.G.S., was elected president; Mr. John Dale, F.R.Met.S., honorary secretary; and Messrs. S. Adshead, H. Birchenough, M.A., J. O. Nicholson, and A. S. Woodward, vice-presidents.

The Liverpool Naturalists' Field Club has now completed a quarter of a century of its existence, a period of time during which it has, as a unit, travelled about 6,500 miles in pursuit of natural history objects, although, as the committee point out with regret, its operations have been practically confined to botanical investigation. The Report details the proceedings of 1884, and includes the presidential address, to which he (Rev. H. H. Higgins, M.A.) gives the title 'Ορνιθολογια, Bird Life under the Shrubs, and what may be seen from my study chair.' The Botanical Résumé, by Messrs. Robert Brown and John Vicars, sustains its value and interest. We are pleased to see that one of the sessional prizes has been awarded to Dr. J. W. Ellis, for a collection of coleoptera. The list of officers remains practically as in previous years.

We think it worth while to record the result of an experiment which was made this year in the little village of Staveley, near Boroughbridge. At the annual Children's Flower Service, which was held this year on the 6th of August, the Rector (Rev. E. Ponsonby Knubley), in addition to giving prizes for the best arranged Bouquets of garden and wild flowers, and in order to encourage a taste for Botany, offered a prize to the scholar who sent in the greatest number of named Wild Flowers. For this last prize there were four competitors. The winner sent in thirty-four different kinds of flowers, of which twenty-seven were rightly named. The others showed respectively twenty-three, twenty-three, and nineteen different flowering plants. Only three kinds were sent in by all the competitors, namely, Bramble, Black Knapweed, and Harebell. In the four collections there were altogether fifty-five different species. When our readers consider that these results were obtained from scholars in a village school, where Botany is not taught, and that this is the first attempt of the kind, they must, we think, consider the result highly satisfactory.

METEOROLOGICAL RETURNS FOR JUNE 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

NAME OF STATION; ITS HEIGHT ABOVE SEA-LEVEL; AND NAME OF OBSERVER.	Atmospheric pressure.	TEMPERATURE (IN SHADE).					RAINFALL.			
			EXTREMES.							
			Highest Maximum registered.		Lowest Minimum registered.					
	Mean Height of Barometer (reduced to zero and to sea-level).	Mean Temperature for Month.	Amount.	Date.	Amount.	Date.	Total Rain Collected.	Number of Days on which there fell 0·01 inch or more.	Greatest Fall in a Single Day. Amount.	Greatest Fall in a Single Day. Date.
	inch	deg.	deg.		deg.		inch		inch	
ISLE OF MAN:										
CRONKBOURNE (140 ft.).... A. W. Moore, F.M.S.....	30·036	53·83	70·10	28th	37·4	6th	1·799	10	0·623	7th
W. COAST:										
SILLOTH, CUMB. (28 ft.) .. Rev. F. Redford, M.A...	30·008	54·46	73·40	28th	35·5	10th	1·360	12	0·640	18th
BARROW-IN-FURNESS (—).. W. S. Whitworth	30·028	55·10	68·00	3rd	44·0	10th, 23rd	1·070	11	0·190	18th, 24th
LIVERPOOL (BIDSTON) (—) J. Hartnup, jun.	30·041	56·80	77·00	3rd	44·0	11th	2·030	9	0·780	7th
CENTRAL HILL REG.:										
NEWTON-REIGNY (Penrith) (577ft.) T.G. Benn, F.M.S.	30·026	53·40	71·30	28th	33·9	10th	1·510	11	0·370	7th
HAWES JUNCTION (1,135 ft.) Station-master	*28·832	51·40	68·00	4-14, 27th	37·0	10th	3·35	11	0·820	18th
STONYHURST (381 ft.)..... Rev. S. J. Perry, F.R.S.	30·060	65·50	75·00	3rd, 4th	32·9	1st	3·936	12	0·848	23rd
EASTERN LOWLAND REGION:										
NORTH SHIELDS (—) .. J. W. Irvine	30·013	54·40	75·00	12th	41·0	10th, 27th	1·270	7	0·710	24th
SCARBOROUGH (120 ft.) .... Allan Rowntree, F.M.S.	30·026	55·32	79·60	4th	43·5	11th	2·840	14	0·720	23rd
YORK MUSEUM (—) ..... The Curator	30·040	57·00	81·00	4th	38·0	27th	2·480	9	0·710	24th
MOORTOWN, LEEDS (500 ft.) G. Paul, F.G.S., F.M.S.	30·047	54·42	77·60	4th	38·1	10th	3·175	10	1·000	23rd
HULL, DERRINGHAM (10 ft.) Wm. Lawton.....	30·140	55·90	86·50	4th	36·0	11th	2·890	12	0·660	8th
SPURN POINT (19 ft.)..... J. B. Smith	30·024	55·90	80·00	4th	46·0	11th	1·160	14	0·390	8th
LOUTH, LINCS. (111 ft.).... T. W. Wallis.....	30·060	58·90	86·00	4th	37·0	11th	2·570	11	0·870	6th
BOSTON, LINCS. (24 ft.).... W. H. Wheeler, M.In.C.E.	30·050	59·00	87·00	3rd	39·0	11th	2·270	9	1·100	7th
LOUGHBOROUGH (—) ..... W. Berridge, F.M.S.....	30·050	58·50	84·00	4th	37·0	11th	3·00	9	0·800	7th
LONDON	30·047	60·30	83·00	4th	42·0	18th	2·00	10	1·040	8th

* Not reduced to sea-level.

Wind.—1st Division (Isle of Man) N. 3, N.E. 5, E. 6, S.E. 0, S. 6, S.W. 9, W. 9, N.W. 17, calm 5 days.
2nd Division: N. 3, N.E. 3, E. 4, S.E. 4, S. 1, S.W. 5, W. 4½, N.W. 4½, calm ½ day.
3rd Division: N. 2½, N.E. 6, E. 1, S.E. 2, S. 1, S.W. 6, W. 5½, N.W. 3, calm 3½ days.
4th Division: N. 4¾, N.E. 6, E. 1½, S.E. 1½, S. 6½, S.W. 4¾, W. 5½, N.W. 2½, calm ½ day.
London: N. 2, N.E. 5, E. 5, S.E. 2, S. 3, S.W. 7, W. 3, N.W. 2, calm 1 day.

Gales.—Isle of Man 5, Silloth 3, Barrow 2, Spurn 3, Boston 1.

Thunderstorms.—Isle of Man, slight on 20th; Stonyhurst, on 7th; Liverpool, 1st; Hull on the 7th; Leeds, 7th.

Bright Sunshine.—Isle of Man, 216·5 hours; Silloth, 192·7 hours; Newton-Reigny, 195·5 hours; Stonyhurst, 196·5 hours; and Hull, 155·1 hours.

Highest Temperature in Sun.—Isle of Man, 132·9° on 14th; Silloth, 132·0° on 12th; Newton-Reigny 130·2° on 14th; Stonyhurst, 139·4° on 11th; Hull, 106·5° on 12th; Leeds (Moortown), 119·0° on 15th.

Naturalist,

BIBLIOGRAPHY OF 1884:

Papers and records published during the year with respect to the natural history and physical features of the North of England.

PART VI.—PHANEROGAMIC BOTANY.

THE scope of the present bibliographical instalment corresponds with that of the London Catalogue of British Plants, in including the Vascular Cryptogams as well as the Phanerogams. The remainder of the Cryptogamia will form a further instalment.

ANONYMOUS (no signature).

A Pretty Stranger. Science Monthly, June, i. 216. **Yorkshire, Lancashire.**

A popular notice of *Trientalis europæa*, which states incidentally that 'In England it is confined to Yorkshire and Lancashire.'

ANONYMOUS (no signature). **Yorkshire.**

An Abnormal Foxglove. Nat. Hist. Journ., September 15th, viii. 120.

Picked at Langwith, near York: a partial reversion to the general Scrophulariacean type.

W. E. A. AXON. **Cheshire.**

The Vitality of Seeds. Rep. Manchester Sci. Stud. Assoc. for 1883, pp. 69-70.

Cites *inter alia* observations made by Mr. C. Penny, in 1843, on the sudden appearance of *Sinapis arvensis* in railway cuttings in Cheshire.

CHARLES BAILEY. **Lancashire.**

Notes on the structure, the occurrence in Lancashire, and the source of origin, of Naias graminea Delile, var. delilei Magnus. Journ. of Bot., Oct., xxii., 305-331, and plates 249-252.

A very full and exhaustive species-monograph, divided into twenty sections, in which, after a brief introduction, the genus and its divisions, the synonymy of the species, its stem, its leaves, leaf-spines, leaf-sheath, leaf-structure, inflorescence, pistilliferous flower, antheriferous flower, pollen, fertilisation, fruit, roots, its Lancashire locality, geographical distribution, and probable source of origin, are discussed, and in the last two sections 'a histological peculiarity' is described, and the plates explained.

This, and *Chara Braunii* Gmel., were first reported as British at the Southport meeting of the British Association in 1883—having been discovered in course of investigating the Ashton-under-Lyne district by Mr. John Whitehead and Mr. James Lee.

J. G. BAKER and W. W. NEWBOULD. **Derbyshire.**

Notes on the Flora of Matlock. Journ. of Bot., November, xxii. 334-344.

This paper includes a voluminous series of observations which may be compared with those on the flora of Buxton, published by Mr. Baker in the same journal for January 1884. The author's remark that Derbyshire's position and physical configuration are such as to show better than any other county the blending of the flora of the North of England into that of the Midland Counties. It is the county that shows best the widest range we get in any one county of Watson's agrarian region, and is one which is capable of division into unusually well-marked physical divisions. Of these there are three: (1) the low country apart from the hills, (2) the limestone hills and valleys, (3) the ridges and slopes of millstone grit.

J. G. Baker.

On the Upland Botany of Derbyshire. Journ. of Botany, January, xxii. 6-15.

Detailed and voluminous notes of the plants observed on the higher lands about Buxton, and the heights to which they attain.

F. Batley. **Yorkshire.**

Botany. Quart. Trans. Barnsley Nat. Soc., 1884, iv. 5-6 and 15.

Notes on plants observed near Barnsley in the first half of 1884.

W. H. Beeby. **Lincolnshire.**

On the Flora of South Lincolnshire. Journ. of Bot., January, xxii. 17 to 22.

Detailed notes on the plants collected during a stay of eight days at St. James Deeping, on the extreme south border of the county. About 300 species were noted, of which 34 are new for the vice county of South Lincoln.

Arthur Bennett.

Zostera nana in N. Lincoln. Journ. of Bot., Oct., xxii. 301. **Lincolnshire.**

Gathered this year at Cleethorpes. No other record for the East coast between Durham and W. Sussex, even *Z. marina* not being reported for Lincolnshire.

Thomas Birks, jun.

The Sundews. Sci. Goss., May, p. 117. **Yorkshire.**

All three British species grow abundantly on Goole Moor.

Birmingham Natural History and Microscopical Society.

Report of Meeting, September 9th. Midl. Nat., Oct., vii. 299. **Derbyshire.**

Mr. J. E. Bagnall exhibited *Pimpinella magna* from near Matlock Bath.

Botanical Locality Record Club.

Report for the year 1883. 8vo., 80 pages, 1884.

The report, as usual, includes innumerable records relating to all the northern counties.

Bradford Naturalists' Society.

Diary of Natural History Observations for 1884. pp. 28. **Yorkshire.**

Numerous notes on plants observed throughout the year in the Bradford district and other parts of the West Riding.

Bradford Naturalists' Society. **Yorkshire, Derbyshire, Westmoreland, Cumberland, Lincolnshire.**

[Reports of Meetings.] Nat., June and July, ix., 196 and 215.

Field-notes made in Yorkshire, Derbyshire, Westmoreland, Cumberland, Lincolnshire.

[James Britten.] **Yorkshire.**

Review of Grant Allen's 'Flowers and their Pedigrees.' Journ. of Bot., June, xxii., 185.

Cypripedium calceolus is not strictly confined to 'one Yorkshire station.'

A. Brotherston.

Rubus chamæmorus. Gard. Chron., August 30th, p. 277. **Northumberland.**

Grows abundantly along the watershed between the counties of Roxburgh and Northumberland, Dumfries, and Selkirk, at elevations varying from over 2,500 feet on Cheviot to 1,250 at Moodlaw Loch. Locally known as 'noops' by the shepherds.

Chas. Browne.

'Cain and Abel.' Sci. Goss., June, p. 141. **Northumberland.**

Orchis latifolia is known by this name in Northumberland.

E. I. J. Browell. **Northumberland, Durham, Yorkshire.**

Address to . . the Tyneside Naturalists' Field Club, . . May 11th, 1882. Nat. Hist. Trans. Northumberland, Durham, and Newcastle, viii. 159-167 (1884).

Brief notes of the botanical results at the 1881 field meetings, viz.:—Corbridge-on-Tyne, Whit-Monday; Middleton-in-Teesdale, June 29th, 30th; Bellingham, Northumberland; Greenhead; and Hesleden Dene, Durham.

G. H. Bryan. **Cumberland.**

Carex ovalis, var. Bracteata. Sci. Goss., September, 1884, p. 213.

This form occurred amongst the type between Thirlmere and Keswick, Cumberland, under circumstances which led to the opinion that the long bracted form was but a chance variety, and not a permanent one.

J. R. Byrom. **Cheshire, Lancashire, Yorkshire.**

The Fauna and Flora of the Ashton-under-Lyne District. Rep. Brit. Assoc. for 1883, pp. 541-3.

The rarest of the plants found are particularised, both phanerogams and cryptogams. The summary includes 600 phanerogams.

William Carruthers. **Cheshire.**

The Seeds of Anthoxanthum. Journ. R. Agric. Soc.; reprinted in Journ. of Bot., February, xxii. 49-52.

Anthoxanthum puelii 'was first noticed by Mr. Britten in 1872, at Mobberley, in Cheshire, in a field which had been broken up and re-sown with grass some years before.'

J. E. Clark.

Primulaceæ again. Nat. Hist. Journ., June 15th, viii. 95. **Yorkshire.**

A Cowslip found at Coxwold, N. E. Yorkshire, reverted to the general type of its order by having two whorls.

H. H. Corbett. **Cheshire.**

Gonepteryx rhamni and its Food-plants. Ent., April, xvii. 91-92.

At Stockport, East Cheshire, *Rhamnus catharticus* is by no means common, and *R. frangula* is only grown in a few gardens.

John Cordeaux.

In Upper Coquetdale. Field, August 2nd, p. 152. **Northumberland.**

Includes notes on various plants of the district.

John Emmet.

White Poppy. Nat., January, ix. 104. **Yorkshire.**

This albino was found in November 1883, at Boston Spa.

Rev. James Farquharson. **Northumberland.**

Carex divisa found in Holy Island. Proc. Berw. Nat. Club, x. 355-356.

F. J. George.

Convallaria rubra. Sci. Goss., June, p. 40. **Yorkshire.**

Inquiry as to what has become of this plant, stated to have grown at Skipton in 1845.

R. George and Emma Jackson.

Cotherstone, on Tees. Nat. Hist. Journ., October 15th, viii. 137. **Yorkshire.**

Notes of observation of eight plants.

T. J. Goldsmith. **Nottingham.**

'Local Observations' [Nottingham]. Midl. Nat., February, vii. 53.

Primula vulgaris and *Ulex europæus* in bloom, presumably near Nottingham.

MUMBRAY R. GOODWIN. **Yorkshire.**

Destruction of British Flora. Pharm. Journ., reprinted in Gard. Chron., August 16th, p. 219.

Refers to the extermination of Cypripedium (Lady's Slipper), once abundant in Bolton Woods, Yorkshire.

G. A. GRIERSON.

Peculiar Narcissus. Sci. Goss. June, p. 140. **Derbyshire.**

Abnormal *N. pseudo-narcissus* found near Ashopton, Derbyshire.

HENRY and JAMES GROVES. **Lancash., Lincolnsh., Westmoreld., Yorksh., Cumberld., Derbysh., Chesh.**

Notes on the British Characeæ for 1883. Journ. of Bot., January, xxii., 1 to 5; and Midl. Nat., February, p. 52.

The authors give notes in detail supplementary to their paper of 1883. The most important notes refer to *Chara Braunii* from Lancashire, new to Britain, and to *Tolypella prolifera* from Lincolnshire.

ALLAN B. HALL.

N. W. Yorks. Nat. Hist. Journ., October 15th, viii. 137. **Yorkshire.**

Notes of uncommon plants near Thirsk, and in Wensleydale and Swaledale.

JOHN HANDLEY.

Saponaria vaccaria. Nat. Hist. Journ., March 15th, viii. 39. **Yorkshire.**

Recorded for Briggflatts, N. W. Yorkshire, and for Whitby.

JAMES HARDY. **Northumberland.**

Report of the Meetings of the Berwickshire Naturalists' Club for the year 1883. Proc. Berw. Nat. Club, x., 257, 258, 259, 281, 283, 285.

Botanical notes made at Holy Island, June 27th, and at Middleton Hall.

JOHN HAWELL, ETC.

Odd Name of Plant. Sci. Goss., April, p. 94; and May, p. 117.

Cain and Abel, near Northallerton, is a name applied to the tubers of *Orchis latifolia*.

WM. C. HEY.

A Live Herbarium. Sci. Goss., May, p. 133-134. **Yorkshire.**

A few of the notes relate to Yorkshire plants.

GEORGE PRINGLE HUGHES. **Northumberland.**

Address delivered to the Berwickshire Naturalists' Club at Berwick, October 10th, 1883. Proc. Berw. Nat. Club, x. 226-227.

Notes the plants gathered at the field-meeting on Holy Island.

HULL FIELD NATURALISTS' SOCIETY.

[Report of Excursion.] Nat., July, ix. 215-216.

Notes of species observed at an excursion to Hornsea, June 14th.

[HENRY HYDE.] **Derbyshire, Cheshire, Lancashire, Yorkshire.**

[Excursion-notes for 1883.] Rep. Manch. Sci. Stud. Ass. for 1883 [published 1884], pp. 19, 26, 27, 31, 32, 35, 36, 39, 42.

Numerous notes on plants observed at excursions, viz.:—Middlewood and Disley, May; Buxton, June; Holford Moss, June; Delamere Forest, July; Malham and Gordale, August; Staley Brushes, September; and Carrington Moss, September.

EGON IHNE und HERMANN HOFFMANN.

Beiträge zur Phänologie. I. Egon Ihne, Geschichte der pflanzenphänologischen Beobachtungen in Europa nebst Verzeichniss der Schriften, in welchen dieselben niedergelegt sind. II. Hermann Hoffmann, Phänologische Beobachtungen aus den Jahren 1879-82. Giessen, 1884, 8vo., pp. 178.

A summary of this memoir will appear in a forthcoming number of the Naturalist.

G. J. Johnson.

The Drosera. Rep. Manch. Sci. Stud. Ass. for 1883, pp. 40-41. **Cheshire.**

The three British species can all be found in the neighbourhood of Delamere, and in other parts of Cheshire; and *Drosera rotundifolia* is abundant on Lindow Common, near the old grand stand.

F. Arnold Lees. **Yorkshire.**

Report on Yorkshire Botany for 1880. Trans. Yorksh. Nat. Union, Series E. (Botany), pp. 121-123.

Notes on the novelties observed in the year 1880.

[Manchester] Lower Mosley Street Schools Natural History Society.

Report, October 1884, pp. 15. **Yorkshire.**

Notes on plants collected at Malham and Gordale, on the 22nd of June.

J. Cosmo Melvill.

Charæas graminis. Entom., November, xvii. 253-4. **Lancashire.**

Hair-grass (*Deschampia flexuosa*), referred to as on Kersal Moor.

S. L. Mosley.

A Visit to York. Young Nat., January v. 39-41. **Yorkshire.**

Parmassia palustris and *Iris pseudacorus* in Askham Bog; and *Drosera rotundifolia* at Strensall.

G. Nicholson. **Yorkshire, Derbyshire, Lancashire, Northumberland.**

Petasites officinalis Mœnch. Journ of Bot., August, xxii. 251.

'In some parts of Yorkshire and Derbyshire both sexes grow together in great abundance, as also in Northumberland and Lancashire.'

A. M. Norman. **Northumberland, Cumberland, Durham.**

Address to . . the Tyneside Naturalists' Field Club . . May 27th, 1881. N. H. Trans. Northumb., Durham, and Newc., viii. 68-71, 83-86 (1884).

Notes on plants observed at field-meetings; at Corbridge-on-Tyne, June 6th, 1880; Alston, Cumberland, June 23rd, 24th; St. John's, Weardale, Durham; Barrasford Crags, North Tyne, September 3rd.

James F. Robinson.

Plant Notes. Sci. Goss., July, pp. 149-150. **Cheshire.**

Mostly notes on the folk-names and folk-lore used in Cheshire.

John E. Robson.

Vitality of Seeds of Henbane. Young Nat., January, v. 46-7. **Durham.**

At Hartlepool a large number of plants of *Hyoscyamus niger* sprang up on the disturbance of ground which had been untouched for centuries.

Percy Russell. **Cumberland, Nottinghamshire.**

Familiar Forest Trees. I. The Oak and the Yew. Ill. Sci. Monthly, July, ii. 20-24.

References to famous trees—the yew-tree of Lorton Vale, near Keswick, celebrated by Wordsworth, and the Parliament Oak in Clipstone Park, Notts., under whose boughs Edward I. held a council in 1290.

P. Sewell. **Yorkshire.**

Double Cuckoo Flower explained. Nat. Hist. Journ., October 15th, viii. 138.

An abnormal *Cardamine pratensis*, found near Whitby.

Whitby Notes. Nat. Hist. Journ., October 15th, viii. 137-138.

Notes of field-observations, and of abnormal plants.

P. S[ewell]. **Yorkshire.**

New Locality for Actæa spicata. Nat. Hist. Journ., June 15th, viii. 95.

Growing very abundantly 'within eight miles of York'.

PHILIP SEWELL [and others].

Botany. Nat. Hist. Journ., February 15th, viii. 16-17. **Yorkshire.**

Field-notes on plants near York, and other places, for January, 1884.

SHEFFIELD NATURALISTS' CLUB. **Yorkshire, Derbyshire, Lincolnshire.**

List of Plants presented by the Sheffield Naturalists' Club to the Sheffield Public Museum. 13th Rep. Sheff. Nat. Club, pp. 13-20.

This long list of plants gives localities and dates; all were mounted by the late Amos Carr, by whom they were collected in Derbyshire, Yorkshire, and Lincolnshire.

REV. H. H. SLATER. **Yorkshire.**

The Flora of Ripon and Neighbourhood. Trans. Yorks. Nat. Union, Series E (Botany), pp. 125-152 [1884].

S. SLATER.

Senecio vulgaris, var. radiatus. Sci. Goss., August, p. 188. **Cheshire.**

Found on the sandhills between Wallasey and Leasowe, in the Wirral, Cheshire.

R. STANDEN.

Paris quadrifolia. Sci. Goss., November, p. 261. **Lancashire.**

Three-, five-, six-, and seven-leaved specimens were commoner than the typical four-leaved ones in a large clump of the plant growing at Rudden Brow, near Goosnargh.

C. E. STANSFIELD.

Rawdon, 13th, 2 mo. Nat. Hist. Journ., March 15th, viii. 39. **Yorkshire.**

Ten plants named as in flower.

H. B. TRISTRAM. **Northumberland, Durham.**

Address to the . . Tyneside Naturalists' Field Club, . . April 15th, 1880. N. H. Trans. Northumb., Durham and Newc., 1884, viii. 1-12.

Notices of the plants gathered at the field-meetings of 1879, viz.:—Holy Island and Bamborough, July 7th and 8th; Cornhill, Northumberland, July 17th and 18th; and Bedburn, Co. Durham, August 4th.

J. E. WALKER. **Cumberland, Lancashire, Yorkshire.**

Floral Calendar, June, 1884. Nat. Hist. Journ., June 15th, viii. 96-97.

A tabulated series of phenological observations from stations in Cumberland, Lancashire, and Yorkshire, made upon 30 species of plants; with calculated averages.

W. WEST. **Derbyshire, Yorkshire.**

On the Upland Botany of Derbyshire. Journ. of Bot., March, xxii. 71-74.

Numerous and detailed field-notes upon the heights to which the Derbyshire plants ascend, supplementary to J. G. Baker's paper in the January number.

YORK AND DISTRICT FIELD NATURALISTS' SOCIETY.

[Reports of Meetings.] Nat. Jan., ix. 108. **Yorkshire.**

Notices of occurrence of various plants in Yorkshire.

ORNITHOLOGICAL NOTE.

Little Owls in Yorkshire.—In November last year, 1884, one of these pretty little birds was taken alive on board a fishing-boat just off Scarborough, and brought to a preserver in the town, who has set it up very well, and it will be added to my collection. About six weeks after, one of the same species was taken in a trap at Seamer, about four miles from Scarborough; this bird was also brought alive to Mr. Roberts to preserve, and is a good specimen. Though the Little Owl has been recorded before in the county, none are authenticated as to date and place. This notice of their occurrence will, I feel sure, interest the readers of the *Naturalist*.—J. WHITAKER, Rainworth Lodge, Notts., August 1885.

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AND

WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

Contents:

	PAGE
Bibliography of 1884: (PART VII.—CRYPTOGAMIC BOTANY)	337 to 340
Luminous Wood—*George R. Vine*	340, 341
Botanical Note:— The Yorkshire Bur-Reeds—*F. Arnold Lees.*	341
Botany of the Eastern Borders—*P. Fox Lee*	342 to 344
Ornithological Notes:— The Little Auk occurring in July—*J. H. Gurney, jun., F.Z.S., M.B.O.U.*; Curious Place for a Cuckoo's Egg—*G. T. Porritt, F.L.S.*	344
The Bull Trout (Salmo Eriox)—*J. A. Erskine Stuart, L.R.C.S.E.*	345 to 347
Notes on Lepidoptera:— Heliothis peltigera in Yorkshire—*G. T. Porritt, F.L.S.*; Ennychia cingulalis, etc., at Helmsley—*J. W. Carter*; Localities of Collix sparsata and Eupithecia constrictata—*G. T. Porritt, F.L.S.*	347
The Yorkshire Naturalists' Union at Whitby	348 to 350
Book Notice:— (Symington Grieve on the Great Auk.)	350, 351
Notes and News	351
Meteorological Returns for July 1885—(Edited by *Geo. Paul, F.G.S., F.R.Met.S.*)	352
Notes on the Avifauna of Upper Teesdale—*James Backhouse, jun., M.B.O.U.*	353 to 360

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Advertisements.—Scale of charges may be had on application.

BOOKS RECEIVED.

The Great Auk, or Gare-fowl—Symington Grieve. [Thomas C. Jack.
*Topography and Natural History of Lofthouse and its Neighbourhood.—George Roberts.—Vol. 2, 1885. [Author.
Vertebrate Fauna of Sutherlandshire, by T. E. Buckley and J. A. Harvie Brown, 1884. [The Authors.
Penzance Nat. Hist. and Antiq. Soc. Report, 1884-5. [Society.
Bristol Naturalists' Society—Proceedings, vol. 4, part 3, 1884-5. [Society.
Bristol Naturalists' Society—Annual Report, etc., 1884-5. [Society.
South London Microscopical and N. H. Club—14th Report, 1884-5. [Society.
Liverpool Naturalists' Field Club—25th Report, 1884-5. [Society.
Manx Note Book, edited by A. W. Moore.—July 1885. [Editor.
Revue Bryologique—12th Année, No. 5. [T. Husnot, Editor.
Grevillea, a quarterly record of Cryptogamic Botany, Sept. 1885. [Editor.
New York Microscopical Society—Journal, June and July, 1885. [Society.
Midland Naturalist for September 1885. [The Editors.
The Young Naturalist for September 1885. [J. E. Robson, Editor.
The Naturalist's World for September 1885. [P. Lund, Editor.
Illustrated Science Monthly for September 1885. [Bogue, Publisher.
Science Gossip for September 1885. [Chatto and Windus, Publishers.

Memoirs marked * will be noticed in our Annual Bibliography of the Literature of the Physical Features and Natural History of the North of England.

EXCHANGES.

Notices of Exchange inserted free of charge to Subscribers.

Bur-Reeds (see note at p. 341 of the present number).—Botanists are requested to send specimens to Mr. W. H. Beeby, 14, Ridinghouse Street [*not* 'square']. Langham Place, London, W.

Wanted to Purchase.—Miall and Carrington's Flora of West Riding of Yorkshire. Newest edition.—B. Hobson, Tapton Elms, Sheffield.

Duplicates of Dried Plants.—L. C. 7th and 8th Edition: Nos. 7, 9, 11, 26, 40, 41, 273, 273*c*, 274, 275, 305, 325, 350, 372, 374, 564, 568, 572, 574, 576, 577, 581, 587, 591, 594, 595, 813, 816, 821, 823, 831, 835, 838. 856, 858, 875, 914, 998, 999, 1,007, 1,008, 1,039, 1,040, 1,261, 1,264, 1.265. 1,276, 1,277, 1,280, 1,282, 1,285, 1,294, 1,296, 1,297, 1,305, 1,314, 1,325, 1,326, 1,327, 1,330, 1.333, *Selinum carvifolia*.—H. Goss, Berrylands, Surbiton Hill, Surrey.

WOODSIA HYPERBOREA.—A few spare specimens of this very rare fern, obtained in Scotland this summer, on sale. Single fronds, 5s. each; complete specimens, 10s. Cash with order.—**W. Robinson, West Bank, Scarborough.**

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BIBLIOGRAPHY OF 1884:

Papers and records published during the year with respect to the natural history and physical features of the North of England.

PART VII.—CRYPTOGAMIC BOTANY.

J. Backhouse.

Lastræa cristata. Nat., March, ix. 137. **Yorkshire.**

Note that William Casson was the first to find this in Yorkshire, on Thorne Moor, 1856.

Edward A. L. Batters. **Northumberland.**

Notes on the Marine Algæ of Berwick-upon-Tweed. Proc. Berw. Nat. Club, x. 349-355, and plates viii.-xi.

Seventeen species cited, some of which pertain to the flora of Northumberland. The following species are recorded for the first time as having been found in this neighbourhood (both S. and N. of the Tweed):—*Sphærozyga Carmichaelii* Harv., *Spirulina tenuissima* Kutz., *Oscillatoria littoralis* Carm., *O. subuliformis* Thwaites, *O. nigro-viridis* Thw., *O. insignis* Thw., *Lyngbya ferruginea* Ag., *Rivularia atra* Roth. var. *confluens*, *Hormospora ramosa* Thw., *Cladophora flavescens* Kutz., *Vaucheria velutina* Ag., *Fucus vesiculosus* Linn., var. *B. subecostatus*, *Dictyosiphon hipporoides* Aresch., *Sphacelaria cæspitula* Lyngb., *Cruoria adhærens* J. G. Ag., *Melobesia Lenormandi* Aresch., and *M. corallinæ* Crn. The plates illustrate *Phlœospora tortilis*, *Nitophyllum reptans*, *Elachista Grevillii*, *Thamnidion intermedium*, *Sphacelaria cæspitula*, *Phyllitis Fascia*, *Melobesia corallinæ*, and *M. Lenormandi*.

Berkeley and Broome. **Northumberland, Cheshire.**

'New British Fungi.' Grevillea, March, xii. 65-70.

Agaricus (*Pleurotus*) *acerinus* Fr. On ash, near Morpeth. *A.* (*Psilocybe*) *subericæus* Fr. In fields near Chester. *Lactarius hysginus* Fr. Near Morpeth.

J. P. Bisset. **Lancashire, Westmoreland.**

List of Desmidieæ found in gatherings made in the neighbourhood of Lake Windermere during 1883. Journ. R. Micro. S., April.—Series 2, vol. 4, pp. 192-197, and plate v. figs. 4-7.

The list includes 11 species of *Micrasterias*, 20 of *Euastrum*, 53 of *Cosmarium*, 3 of *Arthrodesmus*, 40 of *Staurastrum*, 6 of *Xanthidium*, 3 of *Tetmemorus*, 18 of *Closterium*, 2 of *Cylindrocystis*, 11 of *Penium*, 1 of *Docidium*, 4 of *Pleurotænium*, 3 of *Spirotænia*, 1 of *Sphærozosma*, 1 of *Hyalotheca*, 1 of *Bambusina*, 2 of *Desmidium*, and 2 of *Gonatozygon*; in all 182. The localities in which they were collected included the moor near the farm of Lindeth, Bowness, and on Brantfell, the neighbourhood of Claife Heights and Blea Tarn, Easedale, and the neighbourhood of Angle Tarn and Low Tarn.

Bradford Naturalists' Society.

Diary of Natural History Observations for 1884. pp. 28. **Yorkshire.**

Numerous notes on plants observed throughout the year in the Bradford district and other parts of the West Riding.

Bradford Naturalists' Society. **Yorkshire, Westmoreland, Lincolnshire.**

[Reports of Meetings.] Nat., Jan., Feb., April, and July, ix. 106, 122, 153 and 215.

Field-notes made in Yorkshire, Westmoreland, and Lincolnshire.

J. R. Byrom. **Cheshire, Lancashire, Yorkshire.**

The Fauna and Flora of the Ashton-under-Lyne District. Rep. Brit. Ass. for 1883, pp. 541-3.

The rarest of the plants found are particularised, both phanerogams and cryptogams.

J. Cash. **Cheshire, Derbyshire.**

The late Mr. William Wilson: Notes on his early bryological work. Nat., July, ix. 202-212.

Includes various notes upon the mosses and hepatics of Cheshire and Derbyshire.

M. C. Cooke,

New British Fungi. Grevillea, December, xiii. 47. **Cumberland.**

Hypomyces ater Fr. from Carlisle (Dr. Carlyle).

New British Fungi. Grevillea, June, xii. 98-100. **Cumberland, Yorkshire.**

Hydnum (*Resupinati*) *stipatum* Fr. and *H. Weinmanni* Fr. from Carlisle (Dr. Carlyle); *Morchellia Smithiana* Cooke from Malton (Cooke).

J. M. C[rombie]. **North of England.**

Additions to the British Cladoniei. Grevillea, June, xii. 91-92.

Cladonia bacillaris var. *subcoronata* Nyl., not common in N. England; *Cladina sylvatica* var. *grandis* Flk., local, and rare in N. England.

Rev. J. M. Crombie. **Westmoreland, Cumberland.**

New British Lichens. Grevillea, June, xii. 89-91.

Of North of England forms the following are described: *Ephebeia Martindalei* Crombie, Mardale, Westmoreland, on moist rocks, probably a subspecies of *E. hispidula*; *Lecanora decincta* Nyl., allied to *L. intercincta* Nyl.; *Lecidea tenebrica* Nyl., and *L. contenebricans* Nyl., all from Red Scues, Westmoreland, on schistose rocks; *L. coriacella* Nyl., Red Scues, Westmoreland, on porphyritic rocks; *L. periplaca* Nyl., Stavely, Westmoreland, on stones of walls; *Verrucaria interseptula* Nyl., Wastdale, Cumberland, on moist siliceous rocks.

Arthur J. Doherty. **Derbyshire.**

Solorina saccata. Journ. of Microsc. and Nat. Sci., Jan., iii. 28-31, and pl. 5.

Observations on structure, based upon specimens found flourishing at Miller's Dale, Derbyshire, May 1883, for which locality it appears not to be on record.

Alfred W. Griffin. **Yorkshire.**

On the Collection and Preparation of the Diatomaceæ. Journ. of Microsc. and Nat. Sci.: the journal of the Postal Microsc. Soc., July, iii. 138-146.

At p. 145 are some notes on the growth of *Campylodiscus costatus*, as observed by Mr. Norman, whose specimens were gathered in the early spring of 1856 from the Spring Ditch, Hull.

Hull Field Naturalists' Society.

Report of Excursion. Nat., July, ix. 215-216. **Yorkshire.**

Notes of species observed at an excursion to Hornsea, June 14th.

Rev. W. Johnson. **Northumberland.**

A New Lichen found in Northumberland. Nat. Hist. Trans. Northumberland, Durham, and Newcastle, viii. 184 (1884).

Lecanora albo-lutescens Nyl., found on sandstone rocks by the Tyne, a little below Bywell Bridge. Description given.

W. Johnson.

'Sirosiphon saxicola (Næg).' Grevillea, March, xii. 76. **Cumberland.**

This lichen is rare, on damp rocks, Ennerdale Lake side, Cumberland, 1881.

DR. LEDIARD. **Cumberland, Northumberland.**

Salmon Disease. Journ. of Microsc. and Nat. Sci., April, iii. 122-126.

A descriptive account of the fungus which attacks Salmon in the Eden and the Tweed.

F. ARNOLD LEES. **Yorkshire.**

Lastrea cristata near Thorne: its discoverer and its history. Nat., May, ix. 164-166.

A review of the Yorkshire records and their recorders.

MANCHESTER CRYPTOGAMIC SOCIETY.

Derbysh., Yorksh., Cumb., Chesh., Lancash.

Reports of Meetings. Nat., Feb., March, April, and June, ix. 124, 140, 154, 197-8.

Records of cryptogamia found in Derbyshire, Yorkshire, Cumberland, Lancashire, and Cheshire.

[MANCHESTER] LOWER MOSLEY STREET SCHOOLS NATURAL HISTORY SOCIETY.

Report, October, 1884, pp. 15. **Yorkshire.**

Notes on plants collected at Malham and Gordale on the 22nd June.

W. H. PEARSON.

New British Hepaticæ. Journ. Bot., August, xxii. 249. **Cumberland.**

Enumeration of several hepaticæ and mosses either new to England or to Cumberland, or very rare.

W. PHILLIPS and CHARLES B. PLOWRIGHT. **Yorkshire, Lincolnshire.**

New and Rare British Fungi. Grevillea, Dec., xiii. 51-52.

Ramularia hellebori Fckl. on Helleborus, 1884, Mr. Soppett. *Urocystis Fischeri* Körnicke, on the leaves of Carex glauca, Mr. Soppett, November, 1884. *Puccinia Schrœtriana* Plow. and Magnus (æcidiospores = *Æcidium Jacobææ* Grev.) Skegness, 1883.

J. E. R[OBSON].

Scarlet Fungi. Young Nat., May, v. 143. **Yorkshire, Durham.**

Peziza coccinea in Yorkshire and Durham.

J. E. ROWNTREE.

York. Nat. Hist. Journ., June 15th, viii. 95. **Yorkshire.**

May 18th, Adder's Tongue with two 'tongues,' on Hob Moor.

P. SEWELL.

Morchella crassipes. Nat. Hist. Journ., June 15th, viii. 95. **Yorkshire.**

Found in sandy field by Esk, near Whitby.

SHEFFIELD NATURALISTS' CLUB. **Yorkshire, Derbyshire, Lincolnshire.**

List of Plants presented by the Sheffield Naturalists' Club to the Sheffield Public Museum. 13th Rep. Sheff. Nat. Club, pp. 13-20.

This long list of plants gives localities and dates; all were mounted by the late Amos Carr, by whom they were collected in Derbyshire, Yorkshire, and Lincolnshire.

W. G. SMITH. **Lancashire, Westmoreland, Yorkshire.**

Disease of Lily of the Valley. Gard. Chron., July 5th, p. 12.

The plant was extremely abundant on one of the small islets of Windermere, where Mr. Thomas Hebden found it badly infested with *Æcidium convallariæ* Schum., new to Britain. Mr. Smith describes and figures the fungus. An editorial note states that Mr. Plowright mentions its occurrence near Scarborough. With the Windermere *Æcidium* was found an abundance of *Puccinia betonicæ* DC.

W. G. SMITH.

Hydnum corralloides [sic]. Gard. Chron., November 8th, p. 588. **Notts.**

Found growing on a felled Beech near Tuxford, by Mr. W. Gain. The largest example was 8 inches in diameter. The fungus grew last year on the same stump.

W. G. Smith.

Diseases of Mushrooms. Gard. Chron., August 23rd, p. 245. **Yorkshire.**

A new species of *Fusisporium* (named *F. mucophytum* Smith) is described and figured. It was parasitic on *Agaricus* (*Volvaria*) *gloiocephalus* Fr. found on shoddy, near Huddersfield.

H. T. Soppitt.

Poisonous Fungi. Gard. Chron., November 15th, p. 629. **Lancashire.**

Reports that in a case of fungus-poisoning at Eccles near Manchester, the species instrumental were *Agaricus* (*Stropharia*) *stercorarius* Fr., *A.* (*S.*) *semiglobatus* Batsch., *A.* (*Panæolus*) *separatus* L., *A.* (*P.*) *fimiputris* Bull., *A.* (*Psilocybe*) *semilanceatus* Fr., five of the most unwholesome that could have been gathered.

James W. H. Trail. **Yorkshire.**

On the species of Phragmidium on Bramble (Rubus fruticosus) in Scotland. Scott. Nat., January, p. 123.

The form *Phr. rubi* (recorded by Plowright from Yorkshire) has not fallen into writer's hands from Scotland.

W. West. **Derbyshire, Yorkshire.**

On the Upland Botany of Derbyshire. Journ. Bot., March, xxii. 71-74.

Numerous and detailed field-notes upon the heights to which the Derbyshire plants ascend, supplementary to J. G. Baker's paper in the January number.

LUMINOUS WOOD.

By GEORGE R. VINE.

I have read with very great interest the notes of Mr. Musson on Luminous Wood (*Naturalist*, September 1885, p. 326-327), and I am glad to be able to add a little to what he has already given. About twelve months since we bought two pennyworth of fire-wood from the ordinary hawker, and it was placed in the cellar on a brick floor. When I went down into the cellar after dusk, but without a light, I was surprised to find nearly the whole of the wood all aglow, but the luminosity was rather dull. I called my son's attention to the strange phenomenon, and we forthwith began a series of experiments.

1.—The wood was, I believe, the common pine, but it was old and not new wood.

2.—Before we bought it, it had been sawn and chopped into fragments suitable for fire-lighting.

3.—In bringing the wood into the light we could not see that there was any fungoid growth *in the wood*, because wherever the mycelia of fungi penetrate the medullary rays, or other parts, the wood has a black appearance.

4.—Neither could we see fungoid growth on the newly-split portions of wood.

5.—Whenever the wood was broken or split the luminosity was very brilliant, but we soon found that it was possible to penetrate to a *non*-luminous part.

6.—We placed specimens of the wood on a shelf in the cellar and examined it day after day, until the luminosity seemed to pass away altogether, and the wood, when examined about three weeks after our first observations were made, was entirely non-luminous.

I should not now have offered these notes for publication, had not your attention been previously directed towards what I believe will prove a very pleasing investigation for young naturalists during the coming winter.

I said above that I believe that the wood was from the common pine, but I am sorry that I cannot now confirm my first observations, as I find that which I stored away has either been burned or misplaced. I have, however, at the present time about half a load of wood in my cellar, and before finishing this sentence I have been down to examine it. There is beech, elm, sycamore, and oak, but no pine; but none of this wood shows the least luminosity.

I also examined the wood referred to microscopically, with similar results to those arrived at by Mr. W. E. Brown (*op. cit.* p. 327). Will Mr. Musson or Mr. Brown now obtain flakes, thinner the better, of the outer portions of fir-wood, nearer to the bark, and mount specimens—after soaking in turpentine—in balsam? In these flakes, if the wood is dark coloured or blackish, the fungoid growth will be distinctly seen in the woody tissues. After this is done, will the gentlemen referred to compare flakes of the luminous wood, then tell us the results of their observations? This I regret I did not do, and I have been punished, by not having any more examples to tempt my curiosity.

BOTANICAL NOTE.

The Yorkshire Bur-Reeds.—Our field botanists must be careful not to gather *Sparganium* until in quite ripe fruit; and it is impossible to decide whether the two-thirds ripe examples sent to me are *S. ramosum* or *neglectum*. Mr. W. H. Beeby refers the Wensleydale plant sent him, recorded as *neglectum* by me in August number, to *ramosum*—'to a form which in its young state closely resembles *neglectum*, and which is not easily separated unless the eye is familiar with both forms till the fruit is *ripe* and *dry*, and has assumed its ultimate form.' It seems that there are connecting links, then, in facies if not in ultimate character, between Mr. Beeby's new split and Curtis's aggregate.

My *Sparganium* record must therefore be expunged as an error, and, as Mr. Beeby further writes, 'in case other specimens should be sent, kindly let the fruit be as ripe as possible, as much time and trouble are thereby saved to me.' The examples so promptly sent me by Mr. G. Roberts from Methley, Stanley, and Sandall, by Mr. Walsh from Frizinghall and Shipley, and by Mr. P. F. Lee from Coxley Dam and Batley, are all, so far, immature, and although presumably only *ramosum*—being to my eyes identical with the Wensleydale plant—other and later gatherings are necessitated before any trustworthy decision can be come to regarding them.—F. ARNOLD LEES, Hawes, September 7th, 1885.

BOTANY OF THE EASTERN BORDERS.

By P. FOX LEE,

Dewsbury; Secretary for Phanerogamia to the Botanical Section of the Yorkshire Naturalists' Union.

The first and second weeks of last July found two members of the Yorkshire Naturalists' Union—to wit, Mr. J. A. Erskine Stuart, L.R.C.S.E., and myself—exploring, as fully as the time and the strong claims of trout fishing would admit, the pine forests, the sea cliffs, the wooded deans, and the bogs of this historic belt of country. From Chirnside in Berwickshire as a centre, we lost no time in searching out the botanical treasures on which our mind was bent. Chirnside is a small village situated on an outwork of the Lammermoor range, at an elevation of some 300 ft. above sea-level, the Cheviot Hills closing in the southern view at a distance of nearly 30 miles, and on the edge of which can be distinctly seen the battle-field of Flodden. With the advantage of having as leader on several of the excursions a veteran member of the Scottish-Alpine Botanical Club, much was gained by the help of one who knew the ground. At Mellerstane pine woods, spreading over a considerable surface, *Linnæa borealis* was in full bloom, a sight worth going a long way to see, while near it we gathered *Goodyera repens* and *Listera cordata*. In the boggy pools at Gordon Moss—but a little distance from Mellerstane—on a pulp of Sphagnaceæ, were *Sparganium natans*, sub-sp. *S. minimum*, and *Utricularia minor*. Scattered up and down the Moss large tussocks of *Carex paniculata*, tufts of the hoary Sedge, *C. canescens* L., *Stellaria palustris* Ehrh., *Habenaria bifolia* Br., *Orchis latifolia*, sub-sp. *O. incarnata*, and *Genista anglica* were in abundance. Several of the warblers, flitting about the low shrubby Willows (*Salix pentandra* and *S. repens* varieties) and making sweet music, seemed quite heedless of the intruders. *Vicia angustifolia* Roth. was growing on the railway bank near, and on the roadside a few plants of *Galeopsis Tetrahit*, sub-sp. *G. speciosa* Miller, and *Carex leporina*. Gordon Moss is a grand piece of 'saft' ground.

Near Chirnside, hanging in graceful wreaths of bloom over the red sandstone rocks and crumbling shales on the banks of the Whitadder, *Vicia sylvatica*, and the still rarer *Lathyrus sylvestris*, grow in profusion. In the bed of the river are large clumps of *Mentha sylvestris*, a white variety of *Malva moschata*, along with *Œnanthe crocata*, *Carduus tenuiflorus*, *Scirpus sylvaticus*, and on the surface of this choice trout stream were spreading patches, with flowers white as snow, of *Ranunculus fluitans*, as well as the more slender form, with narrower petals, *R. Bachii*, both very distinct as seen growing,

and *Potamogeton perfoliatus*. The Dipper and a colony of Swifts, hereabouts, ever on the look out for food, coupled with the plash of trout, lent an additional charm to the quiet beauty of the scene.

At Pease Dean, one of the many such wooded ravines opening to the German Ocean on the Berwickshire coast, *Aspidium aculeatum*, sub-sp. *A. angulare* Willd., appears to be as much at home, and as abundant, as do the commoner ferns by the rills in our Yorkshire woods. Nearer the sea *Equisetum maximum* Lamk. rears its stately proportions; further inland up the dean *Filago minima* Fries. was just visible on a dry bank. Still further from the coast-line at Edmund's Dean, a wild stony rent in the hill side, besides noting *Geum intermedium*, *Asplenium adiantum-nigrum*, and masses of *Polypodium Dryopteris* clothing dry rocky heaps more as does Parsley fern at much higher altitudes, we also saw a Weasel and an Adder, which sight helped somewhat to compensate the unsuccessful search for *Trientalis europæa*, recorded at — not this station, but the adjoining—Blackburn Rig Dean, for which we had mistaken this one. We bagged fine specimens of *Pyrola media* at Penmanshiel Woods, near Grant's House. Here, too, close to the great London and Edinburgh road, the best find of all must be recorded, viz.:—a grand flowering plant of *Vicia Orobus* DC., the Bitter Vetch.

It is stated in the report of a meeting of the Berwickshire Naturalists' Club ('Proceedings 1879-81') at Grant's House in 1881, that just fifty years previously this rare Vetch was discovered at this station, but 'has now disappeared' (1881). So this re-discovery of ours must be put down as something to be proud of. We devoted a long day to Newham Bog, some miles on the Northumbrian side, and to a long coast-cliff walk northwards from Berwick. The day was one of those exceptionally bright ones we get now and then, the sea dancing in the brilliant sunlight, and the atmosphere free from haze. Newham Bog is just a choice primeval swamp, alas! so few of which now remain to give delight to the botanist. Here the thousands of *Pyrola rotundifolia* and of *Epipactis palustris* carpeting the bog, the one with chaste globose corollas, the other with tropical-like flowers; a perfect jungle, six feet from root to spikelets, of *Carex paniculata*, with *Œnanthe fistulosa*, *Salix aurita*, and other typical bog plants, combined to make a most entrancing natural picture. On the massive old ramparts at Berwick, *Diplotaxis tenuifolia* DC. was in fine bloom. This is a more northerly station for the Wall Rocket than Hooker gives ('from the Cheviots southward') in the 3rd ed. 'Student's Flora.' Now continuing our walk along the sinuous crests of the sea cliffs to Burnmouth, we notice *Silene maritima*, *Plantago maritima*, *Atriplex patula*, sub-sp. *hastata*, var. *A. triangularis* Willd.,

Armeria vulgaris Willd., two rather uncommon forms of the Bent and Fescue grasses (*Agrostis alba* var. *A. stolonifera* and *Festuca rubra*, very glaucous), and myriad festoons of *Vicia sylvatica* all over the steep cliffs. In the cultivated land, on the one hand, was *Papaver strigosum* Boenn., while nearer Burnmouth, *Linaria minor* and *Aira caryophyllea* were growing freely on the railway banks of the North British East Coast line. Marshy places, copses, &c., in the neighbourhood of our centre of operations, yielded *Pyrola minor*, *Galium boreale*, *Epipactis latifolia*, *Euphorbia Lathyris*, and *Carex disticha*. From a distance was pointed out to us the known habitats of *Saxifraga Hirculus*, and of *Corallorhiza innata*, and we very much regretted we had not the time to go and search for them.

Among a splendid collection of Alpines in cultivation at Chirnside, we, however, did see the rare Saxifrage, and such good things (all gathered at British stations) as *Geranium lancastriense*, *Meum athamanticum*, *Woodsia hyperborea*, and *Salix Sadleri* Syme, a rooted specimen of the Willow discovered by the late John Sadler in 1874, and one of the three or four cuttings taken from the newly-found plant by the lamented Curator of the Royal Botanic Garden, Edinburgh, 'at as wild a spot as exists in the kingdom, Corry Ceannmor, Glen Callater, near Braemar.'

Several of the plants we observed were new county and locality records for Berwickshire. Of the *Diplotaxis tenuifolia* I sent a specimen to Sir J. D. Hooker, C.B., Director of the Royal Gardens, Kew, who in a note to me says—'I shall attend to it for the next edition of "The Student's Flora."'

ORNITHOLOGICAL NOTES.

Little Auk (Mergulus alle) occurring in July.—The occurrence of the Little Auk (*Mergulus alle*) in July is not altogether unprecedented, for I have one with all the throat black, which flew on board a ship in the Wash, and was captured, about July 16th, 1872. The same is recorded in the *Zoologist* for 1872 (p. 3228).—J. H. Gurney, Jun., Northrepps, Norwich, August 4th, 1885.

Curious place for a Cuckoo's egg.—Whilst searching, in company with Mr. G. C. Dennis of York, and Mr. J. R. Dore of Huddersfield, for *Hyria auroraria* and *Acidalia straminata* (both of which were taken), on Thorne Waste, July 22nd, I found in a slight hollow, but with no nest, a Cuckoo's egg. On picking it up, I at once remarked to Mr. Dennis, that it felt warm, but he thought there was not more heat than the warm atmosphere would account for. On blowing it the day, or possibly the second day after, I was very much astonished to find it strongly incubated, and am still quite at a loss to know how it came to be in such a position. As stated above, there was no nest, beyond the pressed down withered grass in the slight hollow, and there was no other egg; and being on the open moor, it is most unlikely it had been placed there by any human agency. It had no sign whatever, either on the outside or in its contents, of being an old egg; but on the contrary had every appearance of being at the time in process of incubation. We saw no bird of any kind near it. Can anyone suggest an explanation?—G. T. Porritt, Huddersfield, August 13th, 1885.

THE BULL TROUT (SALMO ERIOX).

By J. A. ERSKINE-STUART, L.R.C.S.E.,
Healey, near Batley; President of the Heckmondwike Naturalists' Society.

Writing in the *Naturalist* for October 1884, the Rev. M. G. Watkins asks some one to take up the interesting subject of the Bull Trout, a very important salmonoid found in many of our rivers, more especially the Tweed. As a native of Tweedside, I have been acquainted with this fish from boyhood, and was certainly surprised to find that Günther and other eminent ichthyologists were of opinion that all the so-called members of the *Salmo eriox* species might be referred to the *Salmo trutta* or Sea Trout. I shall endeavour, shortly and succinctly, to lay before your readers what can be said for giving the Bull Trout specific rank. That there are many structural differences between the Sea and Bull Trout I cannot maintain, but the habits and distribution of the two fish are so different that, apart altogether from structural peculiarities, the *Salmo eriox* may be accounted a true species. The characters, structural and otherwise, on which my opinion is based are as follows:—The Sea Trout (*Salmo trutta*) never exceeds 6 lbs. in weight, its flesh cuts red at every season of the year, its gill-cover (operculum) is slightly tuberculated on its posterior margin, and the teeth on the vomer are more persistent and more numerous than in the *S. salar* and *S. eriox*; the tail is slightly forked when young, becoming ultimately square in the adult, and is shorter and smaller than in the other Salmonoid. The Bull Trout (*Salmo eriox*), on the other hand, runs as high as 20 lbs. to 30 lbs. in weight, its flesh never cutting red at any time of the year, but being yellowish even at the height of the season; the posterior border of the gill-cover is rectangular, and the teeth are longer and stronger than in either the *S. salar* or *S. trutta*, the vomerine teeth being in the adult nearly all lost. The Bull Trout jaw is almost as villainous looking as that of a small shark. The Sea Trout will take the fly freely at all stages of its growth, while the Bull Trout will only take it when in the grilse and kelt stages—especially in the latter, when it is ravenous. Sea Trout are usually found in short tidal rivers communicating with lochs, such as are found in the West Highlands. Bull Trout, on the other hand, are generally found in rivers with a long course, and not influenced by the tide; and where they abound Sea Trout are rarely seen, as for instance in the river with which I am best acquainted, the Whitadder, a tributary of the Tweed, in Berwickshire. Probably the Bull Trout is better known in the Tweed and tributaries than in any other river (Pennell), and therefore it is good ground for observing the habits of this fish. The latest authority evidently leans towards giving the Bull Trout specific rank, for he says:—'Some

suppose the Bull Trout is a hybrid, but if so, it certainly propagates its species, or from whence come the enormous number which frequent the Tweed and its tributaries. Dr. Günther makes *Salmo eriox* and *Salmo cambricus* the same, but the Sewin and the Sea Trout rarely attain a very large size. The Bull Trout, on the contrary, often reaches from 20 lbs. to 30 lbs.'—('Salmon, Trout, and Grayling.' By Ed. Hamilton, M.D., F.L.S.). I am acquainted with an angler who was landing an ordinary sized trout (*S. fario*) from the Whitadder, when a large Bull Trout suddenly jumped from the water, and tore the trout off his hook, and bolted with it. This has occurred more than once on this river. It is peculiar that the Whitadder is totally invaded by this fish, and that the true Salmon (*S. salar*) never enters it to spawn. The reason of this I have never heard explained. Again, the Blackadder, a mossy stream coming out of the peat bogs, which joins the Whitadder low down, is never frequented by these Salmonoids, their instinct evidently leading them to the sister stream, which is gravelly and clear, and more fitted for spawning purposes. And further, such a fish as the Sea Trout is very rarely ever seen in the Whitadder, the *S. eriox* evidently monopolising it. The Bull Trout is very destructive to the spawn of the common trout, and also to the young fry, and the riparian proprietors on the Whitadder now allow all and sundry to angle for these pirates during the spawning season, when they readily take either fly or worm. The weight of evidence given before the Tweed Commissioners is to the effect that the Bull Trout is a true species. The Bull Trout on Tweedside is not looked on with much favour as a food supply, and the damage which it does to the trout fry and spawn in the rivers has rendered the wholesale destruction of the fish a popular measure of angling reform in the district. It has even been proposed by some to prevent these fish from entering the river Whitadder, by presenting a barrier to their progress at its mouth. How different from the Sea Trout, whose flesh is nearly as good as true Salmon, and the sport with which fish is even more exciting than with the true Salmon, in proportion to his size, for he is game to the last, while the Bull Trout is easily mastered by the angler.

In conclusion, I think we have fair grounds for saying that the Bull Trout of the Tweed is surely entitled to specific rank, for all writers are agreed that in that river this fish is seen to possess more distinctive characters than it generally does elsewhere.

Billhope braes for bucks and raes,
And Casit Haugh for swine,
And Tarras for the good Bull Trout
If he be ta'en in time.—*Old Ballad.*

(Quoted by Sir Walter Scott in Notes to the 'Lay of the Last Minstrel.')

Naturalist,

Dr. Hamilton's work previously mentioned (published by Sampson Low, and Co.) is full of all the latest modern views regarding the Salmonidæ, and is well worthy of a careful perusal.

P.S.—Since these notes were put together, it has been proved by experiment that the true Salmon and the Common Trout are capable of forming a *cross*, but the inquiry is not sufficiently advanced to found any conclusions upon its results.—J.A.E.S.

NOTES ON LEPIDOPTERA.

Heliothis peltigera in Yorkshire.—Several days ago, my friend Mr. W. Eagle Clarke sent me a moth to identify which he had taken at Kilnsea-in-Holderness on the 6th of the present month (September). My pleasure may be imagined when I at once saw it was a specimen of *Heliothis peltigera*, a very good species if taken anywhere in Britain, but especially interesting in this case, as being not only quite new to the list of Yorkshire lepidoptera, but so far as I know has never previously been recorded as occurring so far north in Britain. Mr. Clarke (who has kindly given me the specimen) tells me he found it at rest on the sandhills, and that when taken it was evidently freshly emerged from the pupa. That being so, let us hope on future visits Mr. Clarke or others may be fortunate enough to secure more specimens of so interesting an addition to our county list.—GEO. T. PORRITT, Huddersfield, September 14th, 1885.

[Reference to Curtis' 'British Entomology' shows that the species is not new to Yorkshire, as that work gives 'York' as one of the localities in which the insect had occurred. This record seems to have escaped notice when the List of Yorkshire Lepidoptera was written. It appears to be, as stated in Stainton's Manual, very rare, for there is not very much or very precise information accessible as to where it has been taken. What little there is shows the distribution to be eminently southern; it is on record for Cornwall, Devon, Somerset, Gloucester, Dorset, Hants, Sussex, Kent, Surrey, and Middlesex, all contiguous counties lying along the south coast, while further north the records are for 'Wales,' Cambridge, 'Birmingham,' Cheshire, and 'Manchester,' the two latter no doubt being different ways of describing the same locality. The European distribution, as given by Staudinger, corresponds, the species being a south-western one, not extending into Holland, nor any further north than Southern Germany and Hungary.—EDS.]

Ennychia cingulalis, &c., at Helmsley.—Mr. James Terry, a collector of macro-lepidoptera, recently brought me a number of small things to 'set' for him, all of which—about thirty of them—I was pleased to recognise as *E. cingulalis*. He had taken the species in great abundance in July, on the Terrace at Rievaulx. Mr. Terry had also amongst his captures from the same neighbourhood *Satyrus hyperanthus*, *Asthena blomeraria*, and *Venusia cambricaria*; the former he had noticed to be very common but local.—J. W. CARTER, Valley Street, Bradford, July 30th, 1885.

Localities of Collix sparsata and Eupithecia constrictata.—In the Bibliography of 1884—Lepidoptera, p. 291—I find that Mr. Owen S. Wilson has recorded *Collix sparsata* and *Eupithecia constrictata* as being 'only met with in Yorkshire.' I have not seen the original record in 'Land and Water,' but it may be as well to correct such an erroneous impression in the 'Naturalist.' I have taken *C. sparsata* on Wicken Fen in Cambridgeshire, where it is not uncommon. *E. constrictata* is common at Witherslack in Westmoreland, and I have also had it sent to me to name from Scotland. Both species do occur commonly in their Yorkshire localities of course.—GEO. T. PORRITT, Huddersfield, Sept. 10th, 1885.

THE YORKSHIRE NATURALISTS' UNION AT WHITBY.

The fourth meeting for the present year was held at Whitby, for the investigation of the beautiful valley of the Yorkshire Esk and the noble cliffs of the coast line near Kettleness and Whitby. The date was the bank holiday (or as it will in future be the fashion to call it) Lammas Monday, the 3rd of August. Thanks to the co-operation of the local scientific men, the circular issued was a very attractive one. It set out four routes, which were duly carried out. One party, consisting mainly of cryptogamic botanists, spent the day, under the leadership of Mr. M. B. Slater (than whom no one knows Eskdale better), in investigating the upper valley of the Esk about Arncliffe Wood, a locality famous for mosses and hepatics. A smaller party—of conchologists—also worked the Esk valley, and found its speciality, *Unio margaritiferus*, the Pearl Mussel, in great plenty in the river at Lealholm Bridge. Mr. Thomas Newbitt, of Whitby, led a party of botanists, &c., to Mulgrave Woods. Parties of ornithologists and naturalists of more indefinite hue visited the cliffs at Kettleness. The geologists, in charge of the Rev. E. Maule Cole, M.A., worked (and walked) along the coast from Whitby Pier to Sandsend and Kettleness, returning by train, as indeed did most of the other parties. All parties converged upon Whitby by about half-past four of the clock; and at Longhorne's Station Hotel tea was served and all the meetings were held. At the general meeting there was a large muster of members—about seventy or eighty—representing sixteen societies, viz.:—Barnsley, Bradford (Nat. Soc.), Dewsbury, Driffield, Goole, Halifax, Hull, Ilkley, Leeds (3), Malton, Ovenden, Rotherham, Scarborough, and York. The chair was occupied by the president of the Geological section, the Rev. E. Maule Cole, M.A., of Wetwang. The minutes of the previous meeting having been taken as read, Mr. H. Snowden Ward, of Ilkley, proposed, and Mr. W. Denison Roebuck seconded, a motion for the admission into the Union of the Practical Naturalists' Society (so far as regards its Yorkshire members, about 50 in number), which was adopted by an unanimous vote. Three new members were elected, viz.:—Mr. J. W. Addyman, B.A., Starbeck; Mr. Thomas Newbitt, Whitby; and Mr. John Stears, Hull. A vote of thanks to the Marquis of Normanby for permission to investigate Mulgrave Woods, and to Messrs. Foster for similar permission for Arncliffe Wood; and to Messrs. Thomas Stephenson, J. T. Sewell, Thomas Newbitt, M. B. Slater, and Rev. E. M. Cole, for their services in guiding parties during the day or in furnishing information for the circular, was unanimously adopted, on the motion of the Rev. W. C. Hey, M.A., of York, seconded by the Rev. R. M. Norman, M.A., of Maltby. Thanks were also voted to the Leeds Philosophical and Literary Society for a gift for the Union's Library of 63 volumes of the Annals and Magazine of Natural History. The Sectional Reports were then taken as follows:—

For Vertebrate Zoology, the report was given by the secretary of the section, Mr. James Backhouse, jun., M.B.O.U., of York, who stated that though the neighbourhood of Whitby is exceptionally well adapted to the researches of the zoologist, the records for the day were not so numerous as might be expected, probably due to the fact that most of the members interested in Vertebrate Zoology were attracted by the sea coast; consequently the list of migratory birds was small, whilst several interesting resident species were noted, including Rock and Stock Doves, Greater Spotted Woodpecker (near Grosmont), Rock Pipit, Kestrel, Common Heron, Blackheaded and Herring Gulls, and Cormorant. The extensive colony of the last-named species at Kettleness was visited by a few members, and several young birds in an interesting state of plumage were noticed sitting upon the ledges of the cliff. This colony, and that on the Speeton Cliffs, near Filey, are the only ones at present on the Yorkshire coast. The total number of birds seen during the day was 43, whilst only 5 were found nesting. Nothing worthy of note was observed among the other vertebrata.

For the Conchological section the report was given by its president, the Rev. W. C. Hey, M.A., of York, who stated that 19 species only of land and freshwater mollusca had been observed, viz.:—six water-shells—*Pisidium pusillum*, Whitby, *Unio margaritiferus*, the Pearl Mussel, abundant in the Esk at Lealholm Bridge, this river being the only one in Yorkshire in which it occurs, *Planorbis*

nautileus, abundant in the Abbey pond, Whitby, of which it was the only molluscan inhabitant, *Limnæa peregra*, *L. truncatula*, in damp places on the undercliffs, and *Ancylus fluviatilis*, plentiful on shells of *Unio margaritiferus*; three slugs—*Arion ater*, *Limax agrestis*, and *L. maximus*, all at Egton Bridge; and ten land shells—*Succinea putris*, with *L. truncatula* on the undercliffs, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, *Helix aspersa*, *H. nemoralis*, *H. hispida*, *H. concinna*, *H. rotundata*, and *Zua lubrica*, all more or less numerous about Whitby Abbey and the undercliffs. The investigations had been made by Messrs. Baker Hudson and Wm. Coates, of Middlesbrough, W. Denison Roebuck, and Rev. W. C. Hey. The latter had also collected a few marine shells, amongst which he mentioned *Littorina saxatilis*, *L. littorea*, *L. littoralis*, *Chiton marginatus*, *Trochus cinereus*, *Modiola modiolus*, *Anomia ephippium*, and *Patella vulgata*. Of other marine invertebrata, *Uraster rubens* and *Solaster papposa* had been found.

For the Entomological section, in the absence of its officers, Mr. J. H. Rowntree, of Scarborough, reported that the lepidoptera noted included *Satyrus janira*, *Metrocampa margaritata*, *Boarmia rhomboidaria*, *Abraxas grossulariata*, *Eubolia mensuraria*, *Camptogramma bilineata*, and *Cidaria russata* or *immanata*.

For the Botanical section, the report was given by Mr. Geo. Massee, F.R.M.S., of Scarborough, one of the secretaries of the section, who stated that the number of Phanerogams seen in flower or fruit, including those noted in the district between Goathland and Grosmont by a small party from Scarborough, previous to the Union ramble, amounted to 249, amongst which were several of special interest from a distributional point of view, viz.:—*Inula helenium*, *Genista tinctoria*, *Vicia bithynica*, and *Lathyrus sylvestris*. Twelve ferns were collected, but *Osmunda regalis* was not forthcoming, and it is to be feared has, in common with those of the same species once so abundant in the Scarborough district, been exterminated by plant poachers. A single small tuft of *Polypodium dryopteris* was seen. About 20 species of fungi were observed, the most noteworthy being *Æcidium periclymeni*. Mr. M. B. Slater, of Malton, supplemented this report in respect of the cryptogamic plants observed.

For the Geological section the report was given by one of its secretaries, Mr. S. A. Adamson, F.G.S., of Leeds, who stated that the members had had a most practical field excursion. The attendance was exceptionally large, which may be accounted for by the attractive character of the programme, embracing, as it did, some of the finest coast scenery in Great Britain. An unpunctual train having delayed the arrival of the leader, Rev. E. Maule Cole, M.A., in Whitby, on his appearance at the rendezvous, Whitby Pier, an immediate start was made in a northerly direction. Mr. Cole pointed out the dislocation of the strata at this point, arising from a downthrow to the west of about 150 feet. Walking along the sands an immense landslip was noticed, which had occurred so recently as two weeks before. By this immense quantities of drift had been hurled on the beach below. Had time allowed, no doubt some excellent specimens of ice-borne boulders with striæ might have been observed. In the drift, a little further on than the landslip, were observed some stratified patches of compact ferruginous sand, which might possibly have filled up hollows, and immediately underlying these was a breccia of angular and sub-angular fragments of rock, chiefly derived from the lias. These would certainly repay a more lengthened and minute study. A detour was then made to the Sandsend Road, where an outcrop of ironstone was pointed out. This impure silicious ironstone, very poor in quality, is the 'Dogger' at the base of the lower oolites. A heap of cement doggers from the lias was noticed on going down to the beach at Sandsend. The way was now taken at the base of the cliffs towards Kettleness, the vivid colouring of the sections exciting much admiration. It would require the genius of a great painter to adequately pourtray them on canvas, and even then, if faithfully reproduced, the magnificent tints would excite incredulity in those who had not seen the originals. To use the eloquent words of the leader, 'the cliffs on the coast, from Sandsend to Kettleness, present a colouring which is rarely to be met with. Hugh massive yellow sandstones form the top of the cliff; below are green-coated slopes of variegated shales, and at the base dark blue and black walls of rock, resting on a level, pearly grey pavement, covered with tangled seaweed. On the shelves of sandstone above, cormorants, gulls, and jackdaws breed and scream; whilst below, numerous caves, enlarged by the waves, show where the workers for jet have been engaged.' The

beds of hard blue shale of the upper lias of the zone of Ammonites communis now began to appear. This shale, when weathered, breaks up into very small fragments, which are unpleasantly smooth to walk upon. In the upper part of this zone are the cement nodules already noted; below these is the well-known alum shale, such a profitable article of industry formerly in this district, but which has now succumbed before the advance of modern chemistry. The members next came upon the hard, smooth, friable shales of the zone of Ammonites serpentinus, in which zone, and immediately succeeding these shales, is the compact bituminous rock in which jet is found. These beds are well exposed, and some specimens of jet were obtained. Here, too, a solitary jet worker was seen, hewing his way into the cliff in the pursuit of his precarious livelihood. About this place Mr. Summersgill found a pretty fair specimen of Ammonites elegans. Next were seen the micaceous sandy shales of the zone of Ammonites annulatus, but these were much obscured by the falls of sandstone from above. Continuing the arduous walk, the beds of the zone of Ammonites spinatus were observed—a terrace of corrugated beds of ironstone attracting much notice, this being the famous bed from which Cleveland has reaped so much wealth. The first attempt to tear up the stone from its bed for industrial purposes was made here by Bewick in 1827, but was soon abandoned from the difficulty of transit. Turning round Kettleness, the abandoned alum works were seen—a melancholy monument of a departed industry; and turning into Runswick Bay, the cliff was scaled and the train taken at Kettleness station for Whitby. Comparatively few fossils were obtained, not, however, from their scarcity, but from lack of time; but it must be remembered that the members of section F do not go out mere fossil-hunting for the purpose of giving a long list of portentous names, but make it more a point to study the various agencies—terrestrial, internal, fluviatile, and marine—which account for the various changes in the earth's crust.

The meeting concluded with a vote of thanks to Mr. Cole for his services in the chair.

BOOK NOTICE.

The Great Auk, or Garefowl (Alca impennis Linn.): Its History, Archæology, and Remains.—By Symington Grieve, Edinburgh. London: Thomas C. Jack, 45, Ludgate Hill. Edinburgh: Grange Publishing Works, 1885.

The object of this work is a most estimable one, for the history of any animal that has become extinct, even within historic times, and its rescue as far as possible from oblivion, is a worthy subject for an author's pen. Especial importance attaches to the subject of the volume before us, inasmuch as it has not only become extinct within the memory of persons now living, but also because it was once a member of the British fauna.

The task of a biographer must have its measure of melancholy, and the historical portion of this work is far from an exception to the rule, for Mr. Grieve's narrative cannot be perused without awakening a feeling of deep sympathy with the harmless creature which seems to have been 'done to death' by man's sheer wantonness. We learn that in its western strongholds on the isles of the great banks of Newfoundland that sailors not only used its flesh as fresh meat, but even salted it down *by the ton* in some instances; and not content with this, it is recorded that raids were made for sport, and the birds driven into compounds and burnt alive! Of its eastern habitats—which, so far as Britain is concerned, included St. Kilda and the Orkneys as breeding stations—the Geirfuglasker, off the west coast of Iceland, seems to have been the metropolis. Here nature, already sparing in her gifts to the bird, contributed to its extinction by the submergence of the islet in 1830, and the bird was compelled to seek a suitable home, unfortunately nearer to its arch enemy, with the result that the last pair were captured and their egg smashed on the rock Eldy fourteen years later. A hope had been cherished by some that the bird might yet exist in the remoteness of the far north, but a knowledge of its distribution, which by the way is well shown in the book on an excellent map, proves it to be distinctly a sub-Arctic species, and confined to the north Atlantic. So much for the true story of the unfortunate Garefowl. Our author then deals in a series of interesting chapters with the Archæology and Remains, and

from the former especially, if space permitted, we should wish to dwell upon and cull items interesting to our readers, as for instance the discovery of a bone in the county of Durham. Regarding the remains of the Great Auk, the author has prepared complete lists of skins, eggs, bones, &c., and has been at considerable trouble to ascertain the history of each specimen, and in addition, an indication is given as to the location and ownership of them.

A woodcut of the Great Auk in the Central Park Museum, New York, forms a frontispiece, a couple of admirable coloured plates of the eggs in the Edinburgh Museum, and a few woodcuts add to the attractiveness of a book whose typography and general get up leave nothing to be desired.

The author is to be congratulated on the evident thoroughness displayed in working up his subject from its literature, British and Continental, and also on having obtained the aid of naturalists having a special knowledge of the subject, or who have taken interest in the fate of *Alca impennis*. The result of this commendable zeal is not only eminently satisfactory, but in addition is of surpassing interest, not only to the naturalist and the archæologist, on whom it has the strongest of claims, but the general reader too will find its pages worthy of perusal.

NOTES AND NEWS.

The last report of the Manchester Scientific Students' Association contains a photographic portrait and memoir of Mr. John Hardy, who died on the 15th September, 1884, at Manchester, at the age of 67. He was an all-round, active, and indefatigable naturalist, of whose career two counties in the north may well feel proud. A York man by birth, and a resident in his native county till 1848, he then accepted a post in Manchester, where he continued to live and work to the end of his days. His notable achievements date so far back as 1843, when, being at that time resident in Sheffield, he added to the British list *Achillæa tanacetifolia;* and in 1866 he was similarly instrumental as regards *Leucojum vernum*, a Dorsetshire plant. In respect of zoology, he wrote in 1864 a list of British mollusca, with localities assigned to the Manchester species, and the reports of the Scientific Students' Association include numerous papers from him. His collections have partly passed into the museum of the Owens College, while the recollection of his fascinating personal qualities and of the breadth and extent of his scientific knowledge will long remain with all who knew him.

The Bradford naturalists have lost one of their most valued and useful members, Mr. John Firth, who died on the 29th of August, at the age of 53. His studies were chiefly directed towards birds and lepidoptera, but he took a genuine interest in most departments of natural history. He was one of the promoters of the Bradford Naturalists' Society in August, 1875, was elected its first vice-president, succeeding to the presidency in 1878, and has held office of some kind or other down to the last. In 1880, when the society defined a somewhat extensive area for investigation, and appointed recorders for the various departments for investigation, Mr. Firth became recorder in Vertebrate Zoology. The Bradford district in 1875, the year which witnessed the foundation of the Bradford Naturalists' Society, was purely 'virgin ground' so far as the lepidoptera were concerned, a circumstance which afforded Mr. Firth and his friends, especially Mr. J. W. Carter (to whom his friend's decease will be a bitter personal loss), an excellent opportunity, and one well made use of, for doing sound original work. Amongst the most interesting of the captures which rewarded their zeal may be mentioned those of *Larentia salicata*, *L. olivata*, *Geometra papilionaria*, *Emmelesia affinitata*, *Acronycta menyanthidis*, and *Notodonta dictæa*, all of which, and more, were added to the local lists by Mr. Firth. He always took great interest in handing in his records, was strictly accurate in all his work, and evinced great pride in helping beginners, both with specimens and information. Before he lived in Bradford he was one of the founders of the Clayton West Naturalists' Society, and was for some time a member of the one at Heckmondwike. During the early years of what is now known as the Yorkshire Naturalists' Union, but at that time called the West Riding Consolidated Naturalists' Society, he took an active personal share in its work. At his funeral a beautiful wreath of flowers from the Bradford Naturalists' Society testified to the respect and esteem in which he was held by his fellow members, feelings which will be shared by many naturalists in Yorkshire and elsewhere on hearing of his death.

METEOROLOGICAL RETURNS FOR JULY 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

NAME OF STATION; ITS HEIGHT ABOVE SEA-LEVEL; AND NAME OF OBSERVER.	Atmospheric pressure.	TEMPERATURE (IN SHADE).					RAINFALL.			
			Extremes.						Greatest Fall in a Single Day.	
			Highest Maximum registered.		Lowest Minimum registered.					
	Mean Height of Barometer (reduced to zero and to sea-level).	Mean Temperature for Month.	Amount.	Date.	Amount.	Date.	Total Rain Collected.	Number of Days on which there fell 0·01 inch or more.	Amount.	Date.
ISLE OF MAN:										
CRONKBOURNE (140 ft.).... A. W. Moore, F.M.S.....	inch 30·139	deg. 57·94	deg. 77·9	24th	deg. 40·4	9th	inch 2·544	8	inch 0·920	6th
W. COAST:										
BARROW-IN-FURNESS (—).. W. S. Whitworth	30·144	59·20	74·0	24th	49·0	1st	2·620	9	0·700	7th
LIVERPOOL (BIDSTON) (—) J. Hartnup, jun.	30·165	60·40	75·0	26th	48·0	13th	2·290	9	0·810	19th
CENTRAL HILL REG.:										
NEWTON-REIGNY (Penrith) (577 ft.) T. G. Benn, F.M.S.	30·142	57·30	79·3	24th	39·3	30th	1·530	13	0·70	3rd
HAWES JUNCTION (1,135 ft.) Station-master	* 28·947	55·20	77·0	24th	38·0	14th	3·530	11	1·710	18th
STONYHURST (381 ft.)..... Rev. S. J. Perry, F.R.S.	30·176	68·90	80·8	26th	38·9	13th	2·402	10	0·772	19th
EASTERN LOWLAND REGION:										
NORTH SHIELDS (—) ..... J. W. Irvine	30·131	58·90	79·0	25th	43·0	1st	1·160	11	0·280	26th
SCARBOROUGH (120 ft.) .... Allan Rowntree, F.M.S.	30·154	59·27	74·8	11th	45·0	1st	0·860	7	0·330	19th
YORK MUSEUM (—) ..... The Curator	30·166	60·70	86·0	25th	42·0	14th, 29th	0·940	7	0·480	19th
MOORTOWN, LEEDS (500 ft.) G. Paul, F.G.S., F.M.S.	30·146	59·82	80·0	26th	42·0	13th	1·280	7	0·600	19th
HULL, DERRINGHAM (10 ft.) Wm. Lawton.....	* 30·260	59·70	86·0	25th	40·5	29th	0·580	7	0·280	19th
SPURN POINT (19 ft.)..... J. B. Smith	30·155	59·70	76·0	6th	48·0	1st	0·260	5	0·140	19th
LOUTH, LINCS. (111 ft.).... T. W. Wallis.....	30·170	61·74	87·0	25th	45·0	18th	0·670	9	0·260	19th
BOSTON, LINCS. (24 ft.).... W. H. Wheeler, M.In.C.E.	30·190	62·70	93·0	25th	45·0	2nd	0·520	5	0·170	19th
LOUGHBOROUGH (—) ..... W. Berridge, F.M.S.....	30·181	63·00	89·0	25th, 26th	44·0	1st, 2nd	0·140	6	0·040	7th, 19th
LONDON	30·191	64·30	87·0	26th	46·0	9th	0·510	4	0·460	11th

* Not reduced to sea-level.

Wind.—1st Division (Isle of Man) N. 1, N.E. 1, E. 10, S.E. 4, S. 9, S.W. 11, W. 12, N.W. 7, calm 7 days.
2nd Division: N. 2, N.E. 2, E. 2½, S.E. 3, S. 1½, S.W. 6, W. 7, N.W. 6, calm 1 day.
3rd Division: N. 1, N.E. 3, E. 1, S.E. ½, S. 7, S.W. 9, W. 8, N.W. 0, calm 1 day.
4th Division: N. 2½, N.E. 3½, E. 1½, S.E. 3½, S. 3, S.W. 14, W. 4½, N.W. 5, calm 1 day.

Gales.—Loughborough only, on 4 days.

Snow.—None.

Bright Sunshine.—Isle of Man, 229·5 hours; Newton-Reigny, 221·2 hours; Stonyhurst, 218·42 hours; Hull, 152·5 hours.

Highest Temperature—Isle of Man, 131·3° on 5th; Newton-Reigny, 132·5° on 25th; Stonyhurst, 146·4° on 26th; Hull, 112·5° on 26th; Leeds, 131·8° on 26th.

NOTES ON THE AVI-FAUNA OF UPPER TEESDALE.

By JAMES BACKHOUSE, Jun., M.B.O.U.,

York; Secretary of the Vertebrate Section of the Yorkshire Naturalists' Union.

In the following paper, I have endeavoured simply to give a faithful account of observations and inquiries made by myself during the past eight or ten years in the upper Tees valley. As a rule, I have confined my remarks to those species which may be or have been observed above (*i.e.*, west of) Middleton-in-Teesdale, for of the ornithology of the valley below that town, I know very little.

Upper Teesdale as a field for general natural history is scarcely to be surpassed in England. It is a region of basalt overlying and in some places intersecting the mountain limestone; which latter reaches its highest known altitude in the British Islands upon Micklefell, where it appears at an elevation of 2,500 feet above the sea-level.

The mountains, heath covered, culminate on the north-west in Crossfell (2,900 feet), and on the west in Micklefell (nearly 2,600 feet), forming the highest portion of the great Pennine Chain.

The river Tees, rising in the former mountain, traverses a wild moory valley for ten miles or so, when it reaches a lower level by 'Cauldron Snout,' where it descends 200 feet; and again, five miles further still, falls fully seventy feet at the famous 'High Force.'

Beyond this point, with the exception of rapids here and there along its course, there is little or no fall until it finally empties itself into the German Ocean.

Above Cauldron Snout (before mentioned) the Tees is broadened out into a lake-like reach, known as the Wheal. This and various natural mountain tarns and artificial dams (for supplying the lead mines with water) form the favourite resort of numerous water-fowl, especially during the winter.

The soil of the valley, where the district is a limestone one, is of the richest quality, and the variation of rock naturally yields a wide and much varied vegetation.

Even at an elevation of more than 1,200 feet, there is in some places fine pasture land.

On the Durham side of the Tees, at High Force, a portion of the country has been planted as forest, and another smaller portion at Bow Lees, two or three miles lower down the valley. There are, moreover, two or three smaller plantations at a higher elevation than the rest, which are devoted to the rearing of Black Game.

On the Yorkshire side of the river there is no wood whatever, until to within about two miles of Middleton-in-Teesdale, where

Oct. 1885.

there is a native deciduous wood, probably the remnant of what was, 200 years ago, 'Teesdale Forest.' Unmistakable proof has been given that the whole, or at any rate the greater part, of the region about which I write was at one time covered by forest.

It was probably cut down ultimately, partly no doubt for its timber, and partly on account of the very questionable individuals who made it a safe retreat, from which they pillaged the surrounding country.

My most sincere thanks are due to Mr. W. T. Scarth of Staindrop, for his kindness in permitting me to collect specimens upon the Duke of Cleveland's Teesdale estate; also for the hearty co-operation of his head-keeper, Mr. Hood, and for that of Mr. W. Raine, head-keeper to Mr. Fawcett.

I have likewise gained much valuable information from my friend Mr. N. Wearmouth of Newbiggin, who is himself an ardent ornithologist, and whose beautiful collection of birds, chiefly found in the district, contains much of value and of interest.

The nomenclature of the following list is in accordance with the British Ornithologists' Union List of British Birds.

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1. **Turdus viscivorus. Missel Thrush.**
   Resident, fairly abundant, and breeding up to about 1,000 feet.
2. **Turdus musicus. Song Thrush.**
   Resident. Common in the lower parts of the valley, and breeds regularly.
3. **Turdus iliacus. Redwing.**
   Appears during hard winters.
4. **Turdus pilaris. Fieldfare.**
   Regular winter visitant.
5. **Turdus merula. Blackbird.**
   Resident and breeding. Generally and abundantly distributed throughout the lower portion of the valley. It has also been found nesting as far as Harwood Plantation (1,300 feet).
6. **Turdus torquatus. Ring Ousel.** *Local name*—Rock Ousel.
   Summer visitant, nesting throughout the valley. This species has been specially numerous during the past two years; last year (1884) a pair nested under Cross Fell, at an elevation of over 2,000 feet.
7. **Cinclus aquaticus. Water Ousel.** *Local name*—Water Crow.
   One of the commonest species in the valley, nesting regularly on most of the tributaries of the Tees.

8. **Saxicola œnanthe. Wheatear.** *Local name*—Stonechat.
Abundant in summer on all waste places. Breeds up to within a few yards of the summit of Cross Fell (2,900 feet).

9. **Pratincola rubetra. Whinchat.**
Common in summer, and breeds up to an elevation of about 1,200 feet.

Pratincola rubicola. Stonechat.
I can find no evidence whatever for the occurrence of this species in the valley, though it is regularly seen in Weardale, and breeds there.

10. **Ruticilla phœnicurus. Redstart.**
I have seen this bird at Middleton and at High Force. Breeds up as high as Forcegarth Scar (1,050 feet).

11. **Erithacus rubecula. Redbreast.**
Abundant and breeding regularly.

12. **Sylvia cinerea. Whitethroat.**
Summer visitant. Breeds in Ettersgill.

13. **Sylvia curruca. Lesser Whitethroat.**
I found nesting last year (1884) on the Yorkshire side of the Tees, opposite Forcegarth Scar, in a juniper bush.

14. **Sylvia atricapilla. Blackcap.**
Summer visitant. Breeds (N. Wearmouth).

15. **Sylvia hortensis. Garden Warbler.**
Summer visitant and breeds (N. Wearmouth).

16. **Regulus cristatus. Goldcrest.**
Resident. Breeds in the High Force and Bow Lees Woods, usually selecting a spruce branch over-hanging water for its nesting site.

17. **Phylloscopus rufus. Chiffchaff.**
Common during the summer months in the woods, and breeds. I have noticed in Teesdale, as elsewhere, that the species is very variable in its appearance.

18. **Phylloscopus trochilus. Willow Wren.**
Very common in summer. Breeds regularly. I have found it as far up as Harwood Plantation, where I suppose it was nesting.

19. **Phylloscopus sibilatrix. Wood Warbler.**
Summer visitant, usually breeding in the Bow Lees and High Force Woods.

20. **Locustella nævia. Grasshopper Warbler.**
Breeds not unfrequently in the neighbourhood of Newbiggin from which place I have seen its eggs.

21. **Accentor modularis. Hedge Sparrow.**
Resident and breeding.

22. **Acredula rosea. English Long-tailed Titmouse.**
Seen now and then in the woods. Has been found nesting by Mr. Wearmouth.

23. **Parus major. Great Titmouse.**
Pretty generally distributed throughout the wooded portions of the valley. Breeds at Howgill.

24. **Parus britannicus. Cole Titmouse.**
Resident, and abundant in the woods. Nests regularly.

25. **Parus cæruleus. Blue Titmouse.**
Sedentary, and breeding.

26. **Certhia familiaris. Creeper.**
Resident. Breeds in the Bow Lees Woods.

27. **Troglodytes parvulus. Wren.**
Resident and breeding.

28. **Motacilla lugubris. Pied Wagtail.**
Sedentary, and very abundant in some parts. Breeds in Langdon (Mr. Hood).

29. **Motacilla melanope. Grey Wagtail.**
Very abundant, and breeds throughout the valley.

30. **Motacilla raii. Yellow Wagtail.**
Regular summer visitant, breeding throughout the valley in the pastures up to an elevation of 1,100 feet or so.

31. **Anthus pratensis. Meadow Pipit.** *Local name*—Ling-Squeaker.
One of the very commonest species in the district. Breeds everywhere upon the moors.

32. **Anthus trivialis. Tree Pipit.**
Summer visitant, arriving in May. Fairly abundant in many places, especially about Newbiggin and the Bow Lees Woods. Breeds regularly.

33. **Lanius collurio. Red-backed Shrike.**
An instance of the breeding of this south-country species in Teesdale came to my knowledge four or five years ago. The nest was found by my friend Mr. Wearmouth of Newbiggin, by the Tees side near to that village, and was built in a low thorn bush. It contained six eggs, one of them being now in my own collection. I should have liked the whole clutch, but Mr. W. preferred to keep the remainder for his own cabinet, which already contains many interesting and valuable specimens.

A bird of this species was said to have been picked up dead upon Cronkley Scar many years ago.

This season (1885) the cock Red-back has again been observed near the old breeding place.

34. **Muscicapa grisola. Spotted Flycatcher.**

Regular summer visitant to the valley, and breeds.

35. **Muscicapa atricapilla. Pied Flycatcher.**

This migrant nests occasionally in the lower and more cultivated parts of the valley, but is by no means common.

36. **Hirundo rustica. Swallow.**

Found throughout the valley in summer. I possess an egg taken in May 1884 from an old barn near Moor House; elevation 2,000 feet!

37. **Chelidon urbica. House Martin.**

Common in summer throughout the valley, and is found breeding up to about 1,150 feet.

38. **Cotyle riparia. Sand Martin.**

There is an extensive colony of these birds about two miles above Middleton, on the left bank of the river; beyond that point I do not think they breed.

39. **Carduelis elegans. Goldfinch.**

Occurs not unfrequently during hard winters.

40. **Chrysomitris spinus. Siskin.**

Frequently seen in flocks during winter time (N. Wearmouth).

41. **Ligurinus chloris. Greenfinch.**

Fairly abundant about the wooded portions of the Tees valley, and breeds regularly.

42. **Coccothraustes vulgaris. Hawfinch.**

Five or six years since a nest was found in a large thorn bush in Park End Wood, on the Yorkshire side of the Tees, about two miles north-west of Middleton.

Four examples were also shot at Middleton-in-Teesdale, in the autumn of 1883.

This year (1885), at the end of July, a male of this species and a young one, apparently not long out of the nest, were shot at Middleton, and brought for preservation to Mr. Wearmouth, of Newbiggin.

43. **Passer domesticus. House Sparrow.**

Seldom if ever ascends higher than the village of Newbiggin, and even there it seems scarce, whilst numbers may be observed at Middleton.

44. **Passer montanus. Tree Sparrow.**

Has occasionally been found breeding (N. W.).

45. **Fringilla cœlebs. Chaffinch.**

By far the commonest resident woodland bird in the valley. It completely takes the place of the House Sparrow in the higher

parts, and numbers may be seen picking about upon the roads as far as the woods extend. They nest regularly, frequently choosing the fork of a bird-cherry tree for their lichen-covered nest. The highest elevation at which I have found this species nesting is about 1,100 feet.

46. **Linota cannabina. Linnet.**

Seen occasionally, but by no means common. Breeds.

47. **Linota rufescens. Lesser Redpoll.**

Has been found nesting not unfrequently in the neighbourhood of Newbiggin, and I have noticed some in the High Force Woods.

48. **Linota flavirostris. Twite.**

Nest and five eggs found by Mr. Wearmouth near the summit of one of the fells on the Durham side of the river.

49. **Pyrrhula europæa. Bullfinch.**

I have frequently seen this bird in the High Force Woods in summer, from which I judge that it breeds there, but I have never discovered a nest. It has been found nesting in the Bow Lees Woods.

50. **Loxia curvirostra. Crossbill.**

Has been several times seen near Newbiggin and Middleton during autumn.

51. **Emberiza miliaria. Common Bunting.**

Exceedingly common throughout summer in the meadows. Breeds regularly.

52. **Emberiza citrinella. Yellow Bunting.**

Resident and breeding.

53. **Plectrophanes nivalis. Snow Bunting.**

A winter visitant of regular occurrence. This year (1885) they did not leave the district until the latter end of April or the beginning of May.

54. **Alauda arvensis. Skylark.**

Very abundant, and nests up to a considerable elevation.

55. **Alauda arborea. Wood Lark.**

Probably of more frequent occurrence than is generally supposed. I once observed a bird which I took to be of this species above High Force.

56. **Sturnus vulgaris. Starling.**

Resident, and breeding throughout the valley in a variety of places, even as high up as Falcon Clints.

57. **Garrulus glandarius. Jay.**

A pair were seen near to Winch Bridge several years since (N. Wearmouth).

58. **Pica rustica. Magpie.**
Resident and breeds, but not abundantly.

59. **Corvus monedula. Jackdaw.**
Found throughout the valley. Breeds near Middleton.

60. **Corvus corone. Carrion Crow.**
Nests in Harwood Plantation and upon Cronkley Scar.

61. **Corvus cornix. Hooded Crow.**
Common on the fells during winter time.

62. **Corvus frugilegus. Rook.**
There is a colony of these birds near Middleton. Higher in the valley they are also to be met with feeding in the high pastures.

63. **Corvus corax. Raven.**
A species becoming rapidly extinct in the Tees valley, though it still occasionally nests on Falcon Clints or Cronkley Fell. A pair had a nest upon the former crag in 1884, containing six eggs.

64. **Cypselus apus. Swift.**
Summer visitant, occurring throughout the valley from Middleton to Crossfell, and regularly breeding at the former.

65. **Caprimulgus europæus. Nightjar.** *Local name*—Night Hawk.
Nests not unfrequently among the juniper bushes on the Yorkshire side of the river.

66. **Gecinus viridis. Green Woodpecker.**
Occasionally met with in Park End Wood, and has once been seen in the High Force Wood.

67. **Alcedo ispida. Kingfisher.**
Not uncommon in the lower parts of the valley, where it breeds.

68. **Cuculus canorus. Cuckoo.**
Regular summer visitant. In 1884 an extraordinary number made their appearance. Mr. Raine, head-keeper to Mr. Fawcett, observed no fewer than thirteen of these noisy birds during a single walk round Cronkley Scar.

69. **Strix flammea. Barn Owl.**
Occasionally seen in Langdon Beck Plantation.

70. **Asio otus. Long-eared Owl.**
Observed now and again in the plantations. Used formerly to be taken in traps as vermin, but now they are protected.

71. **Asio brachyotus. Short-eared Owl.**
Casual visitant to the upper valley.

72. **Syrnium aluco. Tawny Owl.**
Has been found in Langdon Plantation.

73. **Buteo vulgaris. Common Buzzard.**

Twenty or thirty years ago the Common Buzzard was often caught upon the Teesdale moors in watchers' traps, now, however, they are becoming extremely rare. I think I have only seen two, and heard of very few more during the past five or six years.

Cronkley Scar and Falcon Clints are places exactly suited to these birds, which with their cousins the Peregrines will doubtless turn up there still from time to time, but it is to be feared in gradually lessening numbers, until *Buteo vulgaris* and *Falco peregrinus* will be '*raræ aves*' of the past.

74. **Archibuteo lagopus. Rough-legged Buzzard.**

A single specimen was shot at Millbeck near Newbiggin, by Mr. Wearmouth several years since.

75. **Aquila chrysætus. Golden Eagle.**

On old maps 'Highcup Scar' was marked as the 'Eagle's Chair,' and there are various other places actually nearer to the Tees where they probably nested.

75. **Accipiter nisus. Sparrow Hawk.**

Abundant in the fir woods. Breeds regularly.

77. **Falco peregrinus. Peregrine Falcon.**

This noble bird, like the Buzzard, at one time inhabited Falcon Clints and various other suitable places, rearing its young annually; in fact, it would appear that Falcon Clints originally took its name from this particular species, by which its cliffs were so commonly inhabited.

78. **Falco æsalon. Merlin.**

Still, every year, one pair or more of these elegant little Falcons nest on the high moors, both on the Yorkshire and Durham sides of the Tees; and although up to the present time they have been hunted down as vermin—shot, trapped, or the young ones destroyed—I have come to the conclusion that even from a sportsman's point of view, the amount of harm done by them to Grouse is so insignificant, that the advisability of allowing these interesting birds more quarter seems evident.

No doubt people who know most about them will tell you plainly that they have found young Grouse lying in the immediate neighbourhood of the Merlin's nest, probably more than once. True, but as far as the Tees moors are concerned, I have repeatedly found that by far the commonest remains round a Merlin's nest are *not* young Grouse, but Meadow Pipits!

I advocate the preservation of this Falcon, because I consider that the actual amount of harm done to young Grouse by a pair of Merlins in a whole year is not sufficient to warrant their

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Contents:

PAGE

Notes on the Avifauna of Upper Teesdale—*James Backhouse, jun., M.B.O.U.* .. 361 to 364
(Conclusion)

Micro-Palæontology of the Northern Carboniferous Shales—*G. R. Vine* .. .. 367 to 378
(Part VI., and last.—Carboniferous Shales. Northumberland and North Lancashire, &c. Scaur Limestone and Yoredale Rocks. Foraminifera, &c.)

Ornithological Notes:— 364, 365
The Yorkshire specimen of the Rustic Bunting; Former occurrence of Black Game on the Blubberhouses Moors—*Sir Ralph Payne-Gallwey, Bart., M.B.O.U.*; Flamborough Bird-notes—*Matthew Bailey*; Notes on the Avifauna of Wensleydale—Breeding of Redwing and Dunlin—*F. Arnold Lees.*

Conchological Notes:— 366
Bulimus acutus in Co. Antrim—*S. A. Stewart, M.Bot.S.Edin.*; Amalia gagates in North Lincolnshire—*Wm. Denison Roebuck, F.L.S.*

Entomological Note:— 366
The process of Skin-casting in a Lepidopterous larva—*Edward Howgate.*

Botanical Note:— 378
Polypodium alpestre in the South of England—*George Massee, F.R.M.S.*

Palæontological Notes:— 378
Large Ammonite at Hessle—*N. F. Dobrée*: Mammalian Remains at Kelsey Hill, Holderness—*Id.*

Yorkshire Naturalists' Union at Blubberhouses .. .. 379 to 382

Book Notices:— 382, 383
Report on the Migration of Birds in 1884; Geo. Roberts' Topography and Natural History of Lofthouse and its Neighbourhood.

Notes and News.. 383

Meteorological Returns for August 1885—(Edited by *Geo. Paul, F.G.S., F.R.Met.S.*) .. 384

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Short Notes of important occurrences will be received up to the 20th of the month, and specially urgent ones even later.

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Advertisements.—Scale of charges may be had on application.

BOOKS RECEIVED.

Eastbourne Nat. Hist. Soc.—Trans., 1885, parts 6 and 8, vol. 1, new ser. [Soc.
Natural History Journal for September and October, 1885. [J. E. Clark, Editor.
Dulwich College Science Society—7th Annual Report, 1884-5. [The Society.
Scottish Nat., No. X., new series, October 1885. [Prof. J. W. H. Trail, Editor.
Mineralogical Magazine—Vol. VI., No. 30, for August 1885. [Mineralogical Soc.
Le Naturaliste Canadian, vol. XV., No. 1—Juillet 1885. [Abbé Provancher, Ed.
Journ. of Micros. & Nat. Sci., vol. 4, part 16, Oct. 1885. [Alfred Allen, Editor.
Botanical Exchange Club of the British Isles—Reports for 1883-4. [The Club.
Northamptonshire Naturalists' Society.—Journal, No. 23, August 1885. [Society.
Midland Naturalist for October 1885. [The Editors.
The Young Naturalist for October 1885. [J. E. Robson, Editor.
The Naturalist's World for October 1885. [P. Lund, Editor.
Illustrated Science Monthly for October 1885. [Bogue, Publisher.
Science Gossip for October 1885. [Chatto and Windus, Publishers.

EXCHANGES.

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destruction; and while such numbers of Meadow Pipits remain in Teesdale as there are at present, I cannot think that any serious loss would be noticed through allowing them to live and bring up their young in peace.

79. **Tinnunculus alaudarius. Kestrel.**

This is another species which I feel compelled to plead for. Surely it has been strangely overlooked, that the chief food of this species is *not* Grouse, but mice!

Both Kestrels and Owls eat hundreds of these little pests, and in that way do far more good than the harm of enjoying a Grouse now and again.

The Kestrel breeds not unfrequently on the crags round the upper reaches of the Tees.

80. **Ardea cinerea. Heron.**

Occurs every now and then on out-of-the-way streams, but is nowhere common.

81. **Anser brachyrhynchus. Pink-footed Goose.**

Seen occasionally on migration.

82. **Cygnus olor. Mute Swan.**

One shot near Middleton years ago (Wearmouth).

83. **Anas boscas. Mallard.**

Frequent on the various waters—California Dam, Cronkley Tarn, &c., in autumn and winter.

84. **Spatula clypeata. Shoveller.**

Has been found on the 'Wheal' in winter.

85. **Querquedula crecca. Teal.**

May be seen on Cronkley Tarn, California Dam, the Wheal, &c., from time to time.

86. **Œdemia fusca. Velvet Scoter.**

A drake of this species was killed more than forty years ago in the Tees, near to Cotherstone, and was afterwards examined by Mr. J. H. Gurney, of Norwich, to whom I am indebted for the information.

87. **Mareca penelope. Widgeon.**

Of frequent occurrence on the high tarns.

88. **Clangula glaucion. Goldeneye.**

Has been observed on Coldberry Dam in winter.

89. **Harelda glacialis. Long-tailed Duck.**

A bird—presumably of this species—was seen on the Tees, between Newbiggin and Middleton, two or three years ago by my friend Mr. Wearmouth.

90. **Mergus merganser. Goosander.**

I have seen a specimen shot on the Wheal in winter time.

91. **Columba palumbus. Ringdove.**

Exceedingly common in the fir woods, where they regularly breed.

92. **Columba œnas. Stock Dove.**

A few breed annually in some high scars immediately above Middleton, and odd specimens occur from time to time up the valley.

93. **Phasianus colchicus. Pheasant.**

Occasionally to be seen in High Force Plantation.

94. **Perdix cinerea. Partridge.**

A few pairs may be met with now and again on the moors, and they sometimes breed at Forcegarth Scar, and in Langdon.

95. **Lagopus scoticus. Red Grouse.**

For many years past the Teesdale moors have held a high place in the list of Grouse preserves, and the birds reared upon them are usually numerous and fine.

A couple of years ago sad havoc was made among the birds by disease, but they are now becoming very numerous again, and much damage may be done by over-stocking, through the destruction of vermin, &c., unless great care be taken.

One species should never be forced into preponderance too much, or else a true balance, such as nature alone can give, can never be maintained.

96. **Tetrao tetrix. Black Grouse.**

There are three or four plantations specially devoted to the rearing of these noble birds, and I believe that their numbers are increasing steadily.

97. **Rallus aquaticus. Water Rail.**

A casual visitant of uncommon occurrence. Sometimes seen in the marshes of Cronkley Bridge.

98. **Crex pratensis. Corncrake.**

An abundant species during the summer months; breeding to an elevation of about 1,000 feet.

99. **Gallinula chloropus. Moorhen.**

By no means common in the valley. One was shot ten or twelve years ago near Cronkley Bridge.

100. **Fulica atra. Coot.**

Has once been shot near to Newbiggin.

101. **Charadrius pluvialis. Golden Plover.**

One of the commonest, and to my mind one of the most delightful sounds which greet the naturalist's ear upon the desolate moors, is the melancholy cry of the Golden Plover.

They breed regularly in suitable localities, usually selecting a 'tussocky' piece of ground among the acres of heather.

Most of the birds arrive at their breeding places about March. Towards the end of July they congregate in vast numbers upon some favourite feeding ground, previous to taking their departure to the coast, but some few remain on the moors throughout the winter.

102. **Squatarola helvetica. Grey Plover.**

A pair was shot a few years ago at Middle End, in the neighbourhood of Middleton.

103. **Eudromias morinellus. Dotterel.**

Few mountains could be better suited to this interesting bird than Crossfell, having its summit covered by hummocks of the high mountain moss, *Trichostomum lanuginosum*, in which the Dotterel loves to deposit its richly-marked eggs. A region, too, frequently enveloped by thick fog, and somewhat difficult of access. Such conditions induced the birds regularly to rear their young upon Crossfell formerly, but the march of civilisation and the favourite pastime of angling, for which their feathers are largely in demand, have well-nigh driven them away altogether.

During the past two or perhaps three years, I am not aware that any Dotterels have been seen upon Crossfell, but odd specimens keep turning up from time to time upon the lower fells.

104. **Vanellus vulgaris. Lapwing.**

Very common; breeding throughout the valley.

105. **Hæmatopus ostralegus. Oystercatcher.**

Has once been known to occur in Lunedale.

106. **Scolopax rusticula. Woodcock.**

Found throughout the valley during the winter. They appear in October and November, leaving again in February and March.

107. **Gallinago cœlestis. Common Snipe.**

Resident, and breeding regularly.

108. **Limnocryptes gallinula. Jack Snipe.**

Like the Woodcock in its migratory movements, but not very numerous.

109. **Tringa alpina. Dunlin.**

Common in summer on the higher fells. Last year I found them upon Mickle Fell, Meldon Fell, and Dun Fell, upon all of which mountains they breed, and also upon Green Fell and the dividing ridge between Teesdale and Weardale.

110. **Machetes pugnax. Ruff.**

A Reeve is now and then killed by the Grouse shooters in August or September.

111. **Calidris arenaria. Sanderling.**

I have examined a specimen which was shot some few years ago in winter by Mr. Wearmouth, by the Tees side, close to Newbiggin.

112. **Tringoïdes hypoleucus. Common Sandpiper.**

Abundant on most of the tributary streams, as well as on the main river itself; breeding annually.

113. **Numenius arquata. Curlew.**

The wild note of this bird may be heard on most of the fells in summer, and it nests commonly on both sides of the Tees.

114. **Sterna fluviatilis. Common Tern.**

Accidental visitor of rare occurrence.

115. **Larus canus. Common Gull.**

Appears only in very stormy weather, or on migration.

116. **Larus marinus. Great Black-backed Gull.**

One, which I examined, was shot many years ago near Falcon Clints.

117. **Tachybaptes fluviatilis. Little Grebe.**

Has been observed on the Wheal during winter.

ORNITHOLOGICAL NOTES.

The Yorkshire specimen of the Rustic Bunting, which formerly graced Mr. Lawton's beautiful collection of local birds at Easington, has been purchased by the York Museum, where it rests along with many other county rarities.

Former occurrence of Black Game on the Blubberhouses Moors.—The following extract from Sir Thomas Frankland's Game Book for 1798, regarding the former occurrence of the Black Grouse (*Tetrao tetrix*) in Washburndale, may be of interest:—'Pullan (the keeper) of Blubberhouse says that when a boy he shot *nine* (9) black game in one morning on these moors, and that his mother made them into a pie for the hay-makers.'—RALPH PAYNE-GALLWEY, Thirkleby Park, October 4th, 1885.

Flamborough Bird-notes.—Our summer visitants are now taking their departure. They make for the headland wholesale; enormous quantities have been leaving our shores every day this week. Hundreds of Swallows have come and gone with a very favourable westerly breeze; also several Wagtails, Redstarts, and Wheatears. On September 9th, a splendid Wryneck was caught in the harvest-field of the Rev. Lloyd Greame, Sewerby; one was also obtained at the same place about a month ago. Since the departure of the Guillemots, Puffins, and Razorbills from our coast, their vacant places have been filled up by vast numbers of Terns, Skuas, Gannets, Shearwaters, &c.—MATTHEW BAILEY, Flamborough, September 18th, 1885.

Notes on the Avifauna of Wensleydale — Breeding of Redwing and Dunlin.—During the past summer I have had the pleasure of ascertaining that the Dunlin (*Tringa alpina* L.) breeds on the high, stony moorland about Dodd Fell (2,189 ft.), at the head of Gayledale. Two fresh eggs were were brought to me off Dodd, on June 19th, as eggs of the Little Snipe—the bird being known to the native and other local non-ornithological sportsmen as 'Jack' or 'Little' Snipe only, never as the 'Purre.' I did not suppose the 'Jack' Snipe really bred on our moors, of course, but was not able to refer the local name to the right bird until July 21st, when, walking over Dodd, my companion, Mr. Albert Crosfield, recognised as Dunlins young birds which I should have overlooked as immature Sandpipers.

Naturalist,

It may, perhaps, interest some of your readers to know that the Creeper (*Certhia familiaris*) has this year nested in Bain Gill and Ellergate; that the Short-eared Owl (*Asio brachyotus*) nested among the heather on Mossdale Moor; that the Reed Bunting (*Emberiza schœniclus*) comes up Wensleydale as far as Hawes, breeding in the sedge by the 'backwater'; that the Quail (*Coturnix communis*) has not this year nested in the dale to my knowledge; that hereabouts, where the trees and plantations are not numerous enough (!) to supply sites for the very abundant Missel Thrush (*Turdus viscivorus*), that bird very frequently builds its nest on (sometimes in) the stone walls of our slopes, as also do the Blackbird (*Turdus merula*) and Song Thrush (*T. musicus*), too, for that matter; that the Kingfisher (*Alcedo ispida*) has been unusually plentiful this year on the Yore, four clutches (20 birds) having to my knowledge fledged off and flown, whilst three others (16 eggs) were either taken by myself or brought in to me, the latest being on July 23rd, when 6 unincubated eggs (2 rotten) were taken by Mr. Crosfield from a rat-hole at Birk Rigg; that the Night-jar (*Caprimulgus europœus*) has been unusually common hereaway this year, and the Landrail (*Crex pratensis*) positively abundant, whereas last year (1884) it was decidedly scarce; and finally, most surprising fact of all (!) that this year the Redwing (*Turdus iliacus*) may be said to have *almost* stayed to breed in Wensleydale, the facts concerning which, however, merit circumstantial recital.

In 1884 (not a very late season, but with bad weather about the time when the Fieldfares (*Turdus pilaris*) usually leave this country for the forests of Sweden), as mentioned in the circular for the Hawes meeting of the Y.N.U., a pair of Redwings remained about some larches in Blaeberry Car plantation until May 25th, without showing any disposition to commence nidification. This spring of 1885 was fully ten days later, as judged by the date of the first blooming of flowering plants, yet neither Fieldfares nor Redwings remained anything like so late, perhaps because the weather was just then open and fine. Knowing how late both species stayed in 1884, I was especially anxious to ascertain when they would depart this year, and so spent much time out of doors, early and late, observing them during April. On April 15th they remained still in some plenty in several sheltered localities. On April 16th they were still in Sed Busk Wood. On April 17th, whilst walking with my son in my garden at Park House, Gayle, our attention was drawn to a nest mainly of grass outside, not quite so large as a Thrush's, and rather neat and tidy, placed in the crown of a weeping willow, not more than six feet from the ground, and not twenty yards from the house. This nest had most certainly not been there the night before, for I, my wife and son passed the small tree very many times a day. Of course a watch was kept; the parents were noisy over their task, *both* birds bringing material to complete the nest, which (lined with fine grass and a little sheep's wool upon a clay basis) was completed before the night. The birds were not at all shy, and many a good sight had we of the bright red wing coverts [This is not quite correct—the wing coverts are *not* red, but the flanks or sides *under* the wings are], the light eyebrow streak, and the spotted breast. By the morning one egg was laid—and then, alas! no more. On the 19th we could see nothing of the birds, and walks to Blaeberry Car and Sed Busk revealed the fact that (a month earlier than 1884) the Redwings and Fieldfares had departed. Of course, *why* this pair were seized with the nidificatory fever, and not the others about; and why, having commenced to lay, the henbird did not linger to rear her brood—the weather grew brilliantly fine—but felt she must go with the rest, is beyond me to say: I simply chronicle the fact. After waiting another day, I took the egg, lest the cats should get it, and a singular egg it is, unlike any other I have. In shape it is beautifully pyriform, as pear-shaped as any little Plover's, nearly 1 inch and 1½ lines long, by 8½ lines broad; when first laid the ground colour was clear pale green (now faded to a light brownish-green), and it is plentifully splashed and blotched with red and purple-brown two or three shades darker in hue than the ground colour.

It has just struck me to ask a question: Can a bird put off the laying of an egg when fully formed in the oviduct? If not, why should not Redwings or Fieldfares, staying here late, pair and have ova maturing, which ova must be extruded one would think when ripe, whether on route north or 'wind and weather not permitting,' here in England before the journey? Has anyone ever shot late-staying examples and noticed eggs in the oviduct?—F. A. Lees.

CONCHOLOGICAL NOTES.

Bulimus acutus.—I observe, in conchological notices in number for present month, that *Bulimus acutus* is noted for Co.'s Down and Donegal, the intervening county (Antrim) being left out, It is, however, found in several places in Antrim, and noted in Thompson's 'Natural History of Ireland.'—S. A. STEWART, 6, North Street, Belfast, 3rd December, 1884.

Amalia gagates in North Lincolnshire.—I have to chronicle an additional county for this interesting but imperfectly understood species. Among some slugs obligingly sent by Mr. J. Eardley Mason, of the Sycamores, Alford, and which were collected by his sons in the garden there, were a couple of examples, one adult, the other very young, of the var. *plumbea* of this species. On communicating with Mr. Mason he sent some more specimens, one of them of the same variety, but the other was of the typical form, and particularly interesting to me because—although I have seen scores of the var. *plumbea* from numerous British and foreign localities—I had never before seen an example which could be referred to the type, defined as being black on the back. Writing this note reminds me that this species appears, from the observations of Mr. Taylor and myself, to be by no means so rare an animal as the text-books would lead one to suppose. Many conchologists are, however, unable to discriminate it from the other British keeled slug, *Amalia marginata*, though the differences are obvious enough with a little attention. Why has it not yet been found in Yorkshire? It occurs plentifully in county Durham, and, as we now know, in North Lincolnshire.—W. DENISON ROEBUCK, Leeds, September 12th, 1885.

ENTOMOLOGICAL NOTE.

The process of skin-casting in a Lepidopterous larva.—The following account of a larva casting its skin may be of interest, and may also throw some light on the curious phenomenon of 'moulting,' for in many works on entomology we are only told that 'the skin breaks at the back near the head, and that the larva walks out of its skin after a due amount of twitching and wriggling.' Whilst examining a looper caterpillar, about ¾ inch long and very transparent, under the microscope, I was very much struck with a peculiar internal movement—each separate segment, commencing at the head, elongated within the outer skin whilst the next ones remained in their former state. Each segment in its turn behaved in this curious manner until the last was reached, when the motion was reversed and proceeded towards the head, when it was again reversed. I only saw this process of elongation accomplished three times, although it may have been going on for some time before I captured the caterpillar, which I found in a quiescent state. The whole proceeding appeared as if the larva was gliding within itself, segment after segment, the outer skin remaining stationary as if held by the other segments, whilst the particular one in motion freed itself within. After remaining motionless for a short interval the skin near the head swelled and burst open at the back; then I became aware of the fact that the curious process of 'moulting' was going on before my eyes. Presently out comes the head of the new caterpillar, pushing forward the old one; looking wonderfully clean with its ten shining black eyes on a cream coloured ground. After a short struggle the new true legs, transparent fleshy limbs, very much resembling those of a newly-hatched spider, appear, pushing off and treading under foot the old ones. The outer skin must have suddenly contracted, and although I did not see the actual process of contracting, I conclude such was the case, for on examining the latter segments, there I found the skin and the old true legs shrivelled up. The larva then, by a series of wild wriggles, endeavoured to extricate its new prolegs (false legs), which in a short time it accomplished. Then all is clear, and the larva, which is quite exhausted, coils itself up and literally pants for breath. When it has 'got its wind,' it wanders off probably in search of the food which it has well earned. I have no doubt that such is the process with all larvæ, although the internal movements of most, especially those having thick and opaque skins, cannot be so easily watched as the young and more transparent ones.—EDWARD HOWGATE, Water Hall, Mirfield, 16th September, 1885.

Naturalist,

MICRO-PALÆONTOLOGY OF THE NORTHERN CARBONIFEROUS SHALES.

By GEORGE R. VINE,

Attercliffe, Sheffield; *Secretary of the British Association Committee on Fossil Polyzoa.*

(Concluded from page 320.)

VI.—CARBONIFEROUS SHALES, NORTHUMBERLAND AND NORTH LANCASHIRE, &c. SCAUR LIMESTONE AND YOREDALE ROCKS, FORAMINIFERA, &c.

THE Foraminifera of these Northern Rocks have been so well worked by Mr. H. B. Brady, Prof. Lebour, and the Rev. W. Howchin, that it may appear at first sight almost superfluous to refer to them at all. As, however, the Monograph is not in everybody's hands, and as students of these papers may have some difficulty in referring to its pages, unless they live in the vicinity of large libraries, I need not make any further apology than this, as an introduction to the following remarks on species in my own cabinet.

The Foraminifera both of the Upper and Lower Shales are tolerably well preserved in the Northumberland districts; and the few species that I owe to the kindness of Mr. J. W. Kirkby, from the North Lancashire districts, are also very fine. Species, however, are not what may be called abundant in any of the Shale washings originally supplied to me by the Rev. W. Howchin; but immediately after the publication of the first of this series of papers, Prof. G. A. Lebour sent me the following list of the horizon and range of species in Northumberland. I have not as yet met with the whole of the Foraminifera catalogued, and against the absent forms, according to my own experience, I place (*) after the figures, and where my specimens are doubtful (?).

BERNICEAN FORAMINIFERA OF NORTHUMBERLAND,

After H. B. BRADY and Prof. G. A. LEBOUR.

	Genera and Species.	Lower Bernician—Scar Limestone.	Upper Bernician—Yoredale Rocks.
1 *	Archiediscus karreri *Brady*	*	
2 ?	Bigenerina patula *Brady*	*	
3	Endothyra ammonoides *Brady*	*	*
4	,, bowmani *Phillips*	*	*
5 ?	,, crassa *Brady*	*	
6 ?	,, globulus *Eichwald*	*	*
7 ?	,, macella *Brady*		*
8	,, obliqua *Brady*	*	*

9	Endothyra ornata *Brady*	*	*
10	,, radiata *Brady*	*	*
11 ?	Lagena howchiniana *Brady*	*	*
12 *	,, lebouriana *Brady*		*
13	,, parkeriana *Brady*		*
14 ?	Lituola nautiloidea *Lamarck*	*	
15	Saccammina carteri *Brady*	*	*
16	Stacheia acervalis *Brady*		*
17 ?	,, congesta *Brady*	*	*
18	,, fusiformis *Brady*	*	*
19	,, polytrematoides *Brady*	*	*
20	,, pupoides *Brady*	*	*
21	Textularia eximia *Eichwald*...	*	*
22	,, gibbosa *D'Orbigny*	*	*
23 *	Trochammina anceps *Brady*		*
24 *	,, annularis *Brady*		*
25	,, centrifuga *Brady*	*	*
26 *	,, gordialis *Parker and Jones*		*
27	,, incerta	*	*
28	Valvulina palæotrochus *Ehrenberg*...	*	*
29	,, plicata *Brady*	*	
30	,, youngi *Brady*	*	

From this list it will be seen that five species of Foraminifera belong to Lower Bernician rocks, eight to the Upper, and that seventeen species range from the Lower to the Upper, and these are among the most common of the Carboniferous Foraminifera, some of them having a very wide geographical distribution. In the following notes, however, some of the species marked only Lower Bernician in the list, I have found in the Upper or Yoredale Shales both of Northumberland and North Lancashire.

In the Monograph of Carboniferous and Permian Foraminifera of Mr. Brady, the classification of the species differs from that adopted by Prof. T. Rupert Jones, F.R.S., in the Catalogue of Fossil Foraminifera in the collection of the British Museum (1882). This work may be obtained from the Trustees, through any bookseller, and the student of fossil foraminifera will find it to be a very useful hand-book. In following this classification then, it must not be premised that I do so out of any desire to place myself on a level with, or in opposition to, specialists like Prof. T. Rupert Jones or Mr. H. B. Brady. I accept the arrangement because it is a later production than that of the monograph, and Mr. Jones says that it is adapted from the table in Mr. H. B. Brady's 'Notes on Reticularian Rhizopoda' (Quart. Journ. Micro. Soc., N. S., Vol. xxi.).

Division A.—IMPERFORATA.

Subdivision I.—CHITONACEA.

Fam. I.—*GROMIDÆ.*

Subdivision II.—CALCAREA (PORCELLANEA).

Fam. II.—*MILIOLIDÆ.*

Subdivision III.—ARENACEA.

Fam. III.—*ASTRORHIZIDÆ.*

Carboniferous Foraminifera: *Saccammina* M. Sars.

Fam. IV.—*LITUOLIDÆ.*

Carboniferous Foraminifera: *Lituola* Lamarck; *Haplophragmium* Reuss; *Trochammina* Parker and Jones; *Nodosinella* Brady; *Endothyra* Phillips; *Stacheia* Brady. The Genus *Climacammina* Brady is not given in this list.

Fam. V.—PARKERIDÆ.

Division B.—PERFORATA.

Fam. VI.—*TEXTULARIDÆ.*

Carboniferous Foraminifera: *Textularia* Defrance; *Bigenerina* D'Orbigny; *Valvulina* D'Orbigny.

Fam. VII.—*CHILOSTOMELLIDÆ.*

Fam. VIII.—*LAGENIDÆ.*

Carboniferous Foraminifera: *Lagena* Walker and Jacob; *Nodosaria* Lamarck; *Dentalina* D'Orbigny.

Fam. IX.—*GLOBIGERINIDÆ.*

Fam. X.—*ROTALIDÆ.*

Fam. XI.—*NAMULINIDÆ.*

Carboniferous Foraminifera (*β. Namulitina*): *Archæodiscus* Brady.

In the above classification I give the names of those genera only in which carboniferous species are placed.

Subdivision III.—ARENACEA.

Fam. III.—*ASTRORHIZIDÆ.*

Genus SACCAMMINA M. Sars.

1 **Saccammina carteri** Brady = **Carteria** sp. Brady.

1871. Ann. and Mag. Nat. Hist., H. B. Brady.

1876. Monog. Carb. and Permian Foram., H. B. Brady, p. 57, pl. i., figs. 1-7; pl. xii., fig. 6.

This very peculiar foraminifera is abundant in the Elf Hills Quarries, but the species is widely distributed. In Wales Saccammina Limestone is abundant in one locality especially,

Minera, and examples have been found two and three chambered. It is best to make sections of the Limestone.

Horizon and Localities.—Scaur Limestone: Gaythorn. Yoredale: Elf Hills, abundant; Hurst, North Yorkshire. Mr. Brady gives nine localities in the Four-fathom Limestone, and one in the Gt. Limestone of the Northern Counties, and one locality in Yorkshire and one locality in Scotland. In Belgium the species is found in the Calcaire de Vise.

Fam. IV.—*LITUOLIDÆ.*

Genus LITUOLA Lamarck.

2 **Lituola nautiloidea** Lamarck.

1876. Monog. Carb. Perm. Foram., Brady, p. 63, pl. viii., figs. 7-2-6-1.

This species I have not found in my material. Mr. Brady says that it has only been found in one locality, where it is very rare, and represented by only one or two specimens.

Horizon and Locality.—Scaur Limestone: Bottom Limestone, Skelly Gate, near Redesdale, Northumberland.

Genus ? CLIMACAMMINA Brady.

= *Textularia* Brady (pars).

3 **Climacammina antiqua?** Brady. Monog. Carb. and Perm. Foram., p. 68, pl. ii., figs. 1-9.

= *Textularia* id. Young and Armstrong, 1871.

= *Climacammina antiqua* Brady, 1873. Mem. Geol. Survey Scot., sheet 23.

I have only one poor example of this species from the Northumberland Shales, and after comparing with the Scotch examples, I place it here doubtfully. My Redesdale (crushed specimens), that I formerly regarded as belonging to this species, I now place with the *Textularia* group.

Horizon and Localities.—Scaur Limestone Series: Skelly Gate, Northumberland. Yoredale: Fourstones and Green Leighton (Brady).

Genus TROCHAMMINA Parker and Jones.

4 **Trochammina incerta** D'Orb.

1876. Monog. Carb. and Perm. Foram., Brady, p. 71, pl. ii., figs 10-14.

This very common and widely-distributed species is present in several of the Shales of Northumberland; but the best way to get transparent specimens is to mount some of the finest siftings in

balsam, but some of the larger specimens may be picked out and mounted dry. Mr. Brady gives a long list of references and synonyms of this species.

Horizon and Localities.—SCAUR LIMESTONE SERIES: Lamberton Limestone Lowest Bernicean (Lebour); Redesdale; Skelly Gate. YOREDALE: Elf Hills, Fourstones, Ingoe, Scremerton Limestone (Lebour), Northumberland; Hurst, Yorkshire

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5 **Trochammina gordialis** Parker and Jones. Ann. Mag. Nat. Hist., 1869.

1876. Monog. Carb. and Perm. Foram., p. 77, pl. iii., figs. 1-3.

I have only one example of this species.

Horizon and Locality.—YOREDALE: Ingoe, Northumberland. Elf Hills Quarries (Brady) the only other English locality.

6 **Trochammina centrifuga** Brady.

= *Involutina* id. Brady. Rep. Brit. Assoc., Exeter Meeting, Monog. Carb. and Perm. Foram., p. 74, pl. ii., figs. 15-20.

Horizon and Localities.—SCAUR LIMESTONE SERIES: Redesdale, rather abundant; Skelly Gate, Northumberland. YOREDALE: Hurst, North Yorkshire, rather rare; Fourstones, Ingoe, Northumberland.

Genus ENDOTHYRA Phillips.

Species belonging to this genus are rather abundant in the Carboniferous Shales, but not so abundant in the Northumberland as in the Scotch Shales. I find that the best way to obtain examples is to mount some of the finest siftings in balsam. In the Shales obtained from Gair, Upper Limestone Series, Scotland, all the finer mud-like siftings are literally full of *Endothyra* and *Trochammina* species.

7 **Endothyra ornata** Brady.

1876. Monog. Carb. and Perm. Foram., p. 99, pl. vi., figs. 1-4.

This species is not so abundant in the North of England. It is rather a Southern form, and is found in several localities in the Bristol district. I have no record of it, as obtained from my own material. In my North Lancashire material I have two examples that I believe may be referred to the species.

Horizon and Localities.—SCAUR LIMESTONE: Castleton, Derbyshire (?); Skelly Gate (Brady); Kendle Limestone (? Brady). YOREDALE: Fourstones, Northumberland; Gleaston Castle, North Lancashire.

8 **Endothyra obliqua** Brady.

= *Involutina obliqua* Brady. Rep. Brit. Assoc., Exeter, 1869.

= *Endothyra obliqua* Brady. Monog. Carb. and Perm. Foram., 1876, p. 100, pl. vi., figs. 5-6.

This species also is from my North Lancashire material, but it is not so fine as some of the Irish examples given to me by Mr. Howchin. The species is very rare, and not always in a good state of preservation.

Horizon and Localities.—Scaur Limestone: Skelly Gate (Brady), Northumberland. Yoredale: Gleaston Castle, North Lancashire. Other localities given by Mr. Brady: Sturaway Mine, North Wales; Abden, Scotland; Castle Espie, Ireland.

9 **Endothyra bowmani** Phillips, 1845. Proceed. Yorks. Geol. and Polytec. Soc.

1856. = *Rotalia Baileyi* Hall. Trans. Albany Inst.

1869. = *Involutina lobata* Brady. Rep. Brit. Assoc., Exeter.

1871. = *Involutina lobata* Brady. Trans. Geol. Soc. Glasgow.

1873. = *Endothyra Bowmani* Brady. Mem. Geol. Survey, Scotland, sheet 23.

1876. = *Endothyra Bowmani* Brady. Monog. Carb. and Perm. Foram., p. 92, pl. v., figs. 1-4.

This species is rather more abundant in the Northern Shales, but I have not been successful in obtaining many examples in my Northumberland material. In his remarks on this species, Mr. Brady says, "The Indiana limestone . . . . . is a very remarkable microzoic rock. In appearance it is not unlike a white Oolite, but almost every individual grain is a specimen of this rotaliform Foraminifera; there is indeed scarcely enough of the calcareous matrix to cement the fossils permanently together."

Horizon and Localities.—Scaur Limestone: Redesdale, Skelly Gate. Mr. Brady gives several other localities for the species in Northumberland. Yoredale: Fourstones, Ingoe, Northumberland; Hurst, Yorkshire (several localities, Brady).

10 **Endothyra ammonoides** Brady.

1876. Monog. Carb. and Perm. Foram., p. 94, pl. v., figs. 5-6.

This beautifully transparent species is the most abundant of all the Scotch Foraminifera, but in Gair it is exceptionally abundant in the finest mud-like siftings. When years ago I was washing the virgin clay from this locality, I was surprised to see the quantity of mud passing through my hands before my fossils were apparently clean. Before, however, I had completed the washing, I gathered up some of the fine mud and examined it under the microscope; it was well I did, because this stuff was literally crammed with minute

forms—*Trochamminæ* of three or four species, and *Endothyræ* of several species, but *E. ammonoides* was very abundant. This fine stuff is best mounted in Balsam. The species is not abundant in any one of the Northumberland Shales, but I have found it in the finer shales of Ingoe when mounted in the way recommended. In the example of the species that Mr. Brady figures, there are 157 segments.

Horizon and Localities.—Scaur Limestone : Kendal Limestone (Brady). Yoredale : Ingoe, Northumberland. Several localities given by Mr. Brady. Hurst, North Yorkshire.

11 **Endothyra radiata** Brady.

1869. *Involutina radiata* Brady. Rep. Brit. Assoc.
1871. „ „ Brady. Trans. Geol. Soc. Glas.
1873. *Endothyra radiata* Brady. Trans. Geol. Soc. Glas., and Mem. Geol. Surv., Scotland.
1876. *Endothyra radiata* Brady. Monog. Carb. and Perm. Foram., p. 97, pl. v., figs. 10-12.

This species is not abundant, so far as my experience goes, in the Scaur Limestone series in either Scotland or Northumberland, but in my Castleton material it is a very common form. In the Yoredale series it is found in several localities.

Horizon and Localities.—Scaur Limestone : Castleton, Derbyshire, abundant; Redesdale, Northumberland. Yoredale : Fourstones, Ingoe (Belsay, Coquetdale, Brady), Northumberland; Hurst, Yorkshire.

12 **Endothyra crassa** Brady. (Monog., p. 97, pl. v., figs. 15-17, Lower Bernicean.)

13 **Endothyra globulus** Eichwald. (Monog., p. 95, pl. v., figs. 7-9, Upper and Lower Bernicean.)

14 **Endothyra macella** Brady. (Monog., p. 98, pl. v., figs. 13-14, Upper and Lower Bernicean.)

I cannot give these three species as found by myself in the Northern Shales, unless I was to place (?) against my findings. I have a few obscure forms that I thus place as *E. globulus*, and a doubtful *E. crassa*. I have both of the forms in my Castleton and in my Hurst material, but even here they are rare.

Genus STACHEIA Brady.

Test normally adherent, composed either of numerous segments, subdivided in their interior, or of an acervuline mass, sometimes arranged in layers, sometimes confused. Texture subarenaceous, imperforate. (H. B. Brady, Monog. Carb. and Perm. Foram.)

This curious group of Foraminifera I should rather prefer to give on the authority of Mr. Brady than on my own, although I have several of the species from different Northern localities.

15 **Stacheia marginulinoides** Brady. Monog. Carb. and Perm. Foram., p. 112, pl. vii., figs. 16-21.

This I have recorded for Redesdale, but Mr. Brady does not give it as a Scaur Limestone form in the Northern Shales, but he quotes it in the Lower Limestone series of Scotland.

16 **Stacheia pupoides** Brady. (Monog. Carb. and Perm. Foram., p. 115, pl. viii., figs. 17-27.) SCAUR LIMESTONE: Skelly Gate, but rare. YOREDALE: Fourstones, Northumberland; Hurst, North Yorkshire.

17 **Stacheia acervalis** Brady. (Op. cit., p. 116, pl. ix., figs. 6-8.) YOREDALE: Fourstones (?).

18 **Stacheia fusiformis** Brady. (Op. cit., p. 114, pl. 8, figs. 12-16.) SCAUR LIMESTONE: Skelly Gate (?).

19 **Stacheia congesta** (?) Brady. (Op. cit., p. 117, pl. ix., figs. 1-5.) Forms doubtful.

20 **Stacheia polytrematoides** Brady.

= *S. polytremoides* Vine. (See ante, list, p. 39, No. 24.)

= *S. polytrematoides* Brady. Monog. Carb. and Perm. Foram., p. 118, pl. ix., figs. 10-13.

My examples of this species derived from the Northumberland Shales are rather poor and dwarfish, but from one locality in the North Lancashire material specimens are fine, and the areolated surfaces well marked. My North Yorkshire specimens I place rather doubtfully here.

Horizon and Localities.—SCAUR LIMESTONE: Skelly Gate. YOREDALE: Fourstones (?), Ingoe, Northumberland; Hurst (?), North Yorkshire; Little Urswick, North Lancashire.

Division β.—PERFORATA.

Fam. VI.—*TEXTULARIDÆ.*

Genus TEXTULARIA Defrance.

Mr. Brady in his Monograph gives several references and also a fairish number of synonyms, to which reference may be made; but either the names *Textularia* Defrance, or *Textilaria* Ehrenberg, seems to have been adopted by an almost equal number of authors.

Shell free, regular, equilateral, conical, pyriform, oblong, or cuneiform. Segments numerous, arranged in two alternate parallel

series, septal orifice at the centre of the umbilical margin of each segment, close to its line of contact with the preceding opposite segment. Aperture simple or labyrinthic. (Brady, Monog. Carb. and Perm. Foram.)

In this family are placed genera whose species seem to be the most abundant of the Carboniferous Foraminifera. Members, too, have the longest range in time. *Textularia* species range from the Silurian rocks to the present seas; and *Valvulina* species are very abundant in the chalk detritus of Kent, and are found in the lower and middle Tertiary, and also in the present seas; while *Bigenerina* is living in the Mediterranean or Adriatic Seas.

21 **Textularia gibbosa** D'Orb.

1826. *Textularia gibbosa* D'Orb. Ann. Sci. Nat.

1854. *Textilaria recurvata* (?) Ehrenb. Microgeology, pl. xxxvii., No. 11, fig. 17.

1854. *Textilaria lagenosa* (?) Ehrenb. Microgeology, *Ibid*, fig. 15.

1865-1871. *Textularia gibbosa* Parker and Jones. Ann. Mag. Nat. Hist.

1875. *Textularia gibbosa* Brady. Monog. Carb. and Perm. Foram., &c., p. 131, pl. x., fig. 26.

This species is present in the Carboniferous material of both North Yorkshire and also Northumberland, and it is present, though rare, in my Derbyshire material. It is rather more abundant in the Scotch Shales. I have some very fine examples from several localities.

Horizon and Localities.—Scaur Limestone: Derbyshire and Wales; Redesdale and Skelly Gate, Northumberland. Yoredale: Hurst, North Yorkshire; Fourstones and Lowick, Northumberland.

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22 **Textularia eximia** D'Eichw. Lethæa Rossica, vol. I., p. 355. *Id.* Brady, Monog. Carb. and Perm. Foram., p. 132, pl. x., fig. 27-29.

I have several examples of this species from the Northumberland Shales, but I find that it is rather rare in other English localities. Mr. Brady, however, says (Monog., p. 132): 'By far the larger number of Carboniferous *Textulariæ* have the characters of *T. eximia*. In England it is found more or less frequently throughout the Carboniferous series.'

Horizon and Localities.—Scaur Limestone: Redesdale, Skelly Gate. Yoredale: Fourstones, Ingoe, Northumberland.

Sub-genus BIGENERINA D'Orbigny.

23 **Bigenerina patula** (?) Brady. Monog. Carb. and Perm. Foram., p. 136, pl. viii., figs. 10-11, and pl. x., figs. 30-31.

Examples apparently of this species I have from two English localities, but after very careful study I place them here doubtfully, especially so as Mr. Brady says (op. cit., p. 137): 'In England *B. patula* has only been found in the saccammina-limestone of Elf Hills, Northumberland.'

Horizon and Locality.—Lowick (?), Northumberland; Castleton (?), Derbyshire.

Genus VALVULINA D'Orbigny.

= *Tetraxitis* Ehrenb. *Textilaria* (part) Ehrenb.

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24 **Valvulina palæotrochus** Ehrenb.

= *Textilaria* id. Ehrenb. (See Brady for other synonyms.)
= *Involutina conica* Brady. (Young and Armstrong's Cat.)
Valvulina palæotrochus Brady. Monog. Carb. and Perm. Foram., p. 83, pl. iv., figs. 1-4.

This is the most abundant form that I have met with in the Carboniferous Shales of England. Mr. Brady also remarks (op. cit. p. 85) that this 'is perhaps the commonest and most generally diffused' of all the smaller Carboniferous Foraminifera.

Horizon and Localities.—Scaur Limestone: Castleton, Derbyshire; Arnside, North Lancashire; Redesdale, Skelly Gate, Northumberland. Yoredale: Hurst, Yorkshire; Gleaston Castle, North Lancashire; Fourstones, Ingoe, Northumberland.

25 **Valvulina palæotrochus** var. **compressa** Brady. Monog. Carb. and Perm. Foram., p. 85, pl. iv., figs. 5-*a*, *b*.

By no means so abundant as the typical species.

Horizon and Localities.—Scaur Limestone: Castleton, Derbyshire; Redesdale, Skelly Gate, Northumberland. Yoredale: Gleaston Castle, Little Urswick, North Lancashire; Ingoe, Northumberland.

26 **Valvulina decurrens** Brady. Monog. Carb. and Perm. Foram., p. 87, pl. iii., figs. 17-18.

'The outspread forms, of which *Valvulina decurrens* is the representative, stand in somewhat the same relation to *V. palæotrochus* as that of *Trochammina incerta* bears to the regular septate type of its own group. In neither genus can any hard line of demarcation be drawn between the successive "species"' (op. cit., p. 87).

Horizon and Localities.—Scaur Limestone: Castleton, Derbyshire, rather rare; Redesdale, Skelly Gate, Northumberland. Yore-

DALE: Holker Park, Gleaston Castle, Little Urswick, North Lancashire; Fourstones, Ingoe, Northumberland.

27 **Valvulina plicata** Brady. Monog. Carb. and Perm. Foram., p. 88, pl. iv., figs. 10-11.

This is a very rare form, so far as my own experience goes; but I have it from a few localities, both in Scotland and England.

Horizon and Localities.—SCAUR LIMESTONE: Castleton, Derbyshire, very rare. YOREDALE: Ingoe, Northumberland.

28 **Valvulina youngii** Brady. Monog. Carb. and Perm. Foram., p. 86, pl. iv., figs. 6-8-9.

In his Monograph, Mr. Brady says of the distribution of this species (p.86): 'In England only noticed hitherto in one locality in the Lower Limestone series—viz., Fallowlees, Northumberland. In Scotland, at several localities pertaining to the Lower Carboniferous Limestone group, but not in any other portion of the series. In all cases very rare.' This is a beautiful and unmistakable form, and I am very glad to be able to add to the number of localities.

Horizon and Localities.—SCAUR LIMESTONE: Castleton, Derbyshire. YOREDALE: Hurst, Yorkshire; Gleaston Castle, Little Urswick, North Lancashire—very fine examples at Gleaston.

29 **Valvulina youngii** var. **contraria** Brady. Monog. Carb. and Perm. Foram., p. 87, pl. iv., figs. 7-*a*, *b*.

Horizon and Localities—SCAUR LIMESTONE SERIES: Castleton, Derbyshire. While the type is rare in this locality, the variety is rather common. YOREDALE: Hurst, North Yorkshire; Gleaston Castle, North Lancashire.

Fam. VIII.—*LAGENIDÆ.*

Genus LAGENA Walker and Jacob.

30 **Lagena howchiniana** Brady. Monog. Carb. and Perm. Foram., p. 121, pl. x., figs. 1-5.

Localities.—Redesdale and Fourstones, Brady (not in my collection).

31 **Lagena parkeriana** Brady. Monog. Carb. and Perm. Foram., p. 120, pl. viii., figs. 1-5.

= *Lagena lebouriana* Vine. (Naturalist, see ante, p. 9, List No. 27).

Because of certain peculiarities of the surface markings of one of my examples, I was inclined to believe that I had discovered this species in a lower horizon than that recorded by Prof. Lebour. After carefully comparing my specimen with the figures of Mr. Brady (Monog., pl. viii., fig. 6), I must be allowed to withdraw the reference,

especially so as Prof. Lebour was the first to direct my attention to the misplacement.

Horizon and Localities.—Scaur Limestone Series: Redesdale, Northumberland. Brady gives Elf Hills and Fourstones.

This completes my list of the Foraminifera from these Northern Shales, and I have purposely given a rather full reference to the labours of Mr. Brady, because I believe, as before stated, that the work is difficult of access to the generality of students. It is now to be hoped that better work than was possible to me, will follow; and by others, to whom the material may be more accessible.

With regard to the other examples of the micro-organisms of these Upper Shales, it may be well to furnish a few details. In the Fourstones and Lowick material, besides fragments of Echinoderms of two or three species, there are a few minute Brachiopoda (spawn ?), and two examples of Gasteropods; but these are very, very rare. In the Prudhowe Quarry rotted limestone material I have been able to pick out spines and plates of *Archæocidaris urei* ? Fleming, and also what I believe to be fragments of *Pisocrinus globularis* ? De Kon., and plates of *Palæchinus*. I have not, however, met with any examples of Foraminifera, Polyzoa, or Entomostraca, in the material from this locality.

PALÆONTOLOGICAL NOTES.

Large Ammonite at Hessle.—I am indebted to Mr. J. Sleight, a member of the Geological Section of the Hull Field Naturalists' Society, for the following:—The contractors for the Hull and Barnsley Railway have extensively worked the chalk quarries on the south side of the Humber, opposite to Hessle, and met with an Ammonite in perfect preservation, of the noteworthy size of 22 inches diameter and 65 inches circumference, which is now in the possession of Mr. Sleight.

Mammalian Remains at Kelsey Hill, Holderness.—The same contractors have also extensively worked the famous Glacial Gravel Deposit at Kelsey Hill, in Holderness. A well-developed Rhinoceros Horn, an Elephant's Tooth and many smaller Bones, evidently coeval with the gravel deposit, were frequently found, and are mostly in the possession of the engineer.—N. F. Dobrée, President Hull Field Naturalists' Society, August 20th, 1885.

BOTANICAL NOTE.

Polypodium alpestre in the South of England.—I received the other day from Mr. T. Bunker, of Goole, for identification, a fern found growing 'high up on a wall in Devon,' which proved to be *Polypodium alpestre* Hoppe. The occurrence of a typical alpine species in the extreme south of England was scarcely to be expected, and is an interesting fact in connection with the distribution of this species.—G. Massee, Scarborough, August 17th, 1885.

THE YORKSHIRE NATURALISTS' UNION AT BLUBBERHOUSES.

The excursion season of 1885 was brought to a close by a most successful and interesting meeting held at Blubberhouses, in Washburndale, on Saturday the 26th September, by invitation of the Right Hon. Lord Walsingham, M.A., ex-President of the Union. The invitation had been given for his Lordship's year of office as President, but circumstances had caused its postponement for a year. Arrangements having been made for conveyances to leave Harrogate at 9.0 a.m., Blubberhouses was reached shortly before 11.0 a.m. On the arrival of the visitors they were received by Lord Walsingham and his cousin, Sir Ralph Payne-Gallwey, Bart. Two parties were at once formed. The smaller, which was under the charge of Mr. W. Eagle Clarke, F.L.S., investigated the margins of the Fewston reservoir—permission having been granted by Mr. Alderman Woodhouse, chairman of the Waterworks Committee of the Leeds Corporation, for members to have full access to their property, and every facility granted under his instructions by Mr. T. E. Bower, the resident superintendent. The larger party of members accompanied his Lordship, who guided them along the Kexgill Road to see the geological sections there exposed; thence conducting the party over his grouse moors, and into the Washburn groove, which was followed down stream to Blubberhouses. Several isolated parties of members alighted at Otley, and followed the beautiful scenery of the valley up stream to the rendezvous. All parties united at about 3.0 p.m., when they were entertained by his Lordship to a substantial tea, served in a marquee erected on the lawn, in which, after the interval of the sectional meetings (at the Frankland Arms Inn), the general meeting was held.

The chair of the general meeting was occupied by Lord Walsingham, and about 80 or 90 members, including Sir R. Payne-Gallwey, Bart., and Sir Percival Radcliffe, Bart., were present. In opening the meeting, his Lordship gave the substance of a letter which the Secretaries had received from the President of the Union (Rev. W. H. Dallinger, LL.D., F.R.S.), expressing his great regret at being again unable to be present with the Union, an inability caused by wholly adverse circumstances, and his Lordship further explained that Dr. Dallinger's tenure of the office had been precipitated a year earlier than had been expected by reason of his own inability to accept office for a second term, and also that at least two Union meetings had happened to be fixed for days of important engagements in connection with Wesley College, of which Dr. Dallinger is Principal. The minutes having been accepted as read, the list of societies was called over, when it was found that representatives of the following 22 societies were present:—Barnsley, Beverley, Bradford (3 societies), Dewsbury, Elland-cum-Greetland, Goole, Halifax, Heckmondwike, Ilkley, Leeds (3), Liversedge, Ovenden, Ripon, Rotherham, Selby, Wakefield, York, and the Practical Naturalists' Society. Five new members were elected, viz.:—Sir Percival Radcliffe, Bart., Rudding Park, and Messrs. T. E. Bower of Fewston, Walter Copley of Halifax, A. C. Davies of Ackworth, and Harry Davis of Halifax. Mr. J. W. Davis, F.S.A., of Halifax, then proposed that the thanks of the Union be presented to Mr. Alderman Woodhouse and the Leeds Waterworks Committee for the permission to investigate the margins of the reservoirs. This was unanimously adopted, after being seconded by the Rev. E. Ponsonby Knubley, M.A., Rector of Staveley, who, in course of his remarks, threw out one to the effect that it would be extremely interesting to ascertain what effect the formation of three such extensive sheets of water in the valley as the Fewston, Swinsty, and Lindley Wood Reservoirs had had upon the flora and fauna of the district. The sectional reports were then given.

For the Vertebrate section its secretary, Mr. James Backhouse, jun., M.B.O.U., of York, reported that as far as the number of species was concerned, little had been noted during the day, probably owing, in the first place, to the fact that the water in the reservoirs was unusually low, and in the second place, to the lateness of the season. The Willow Wren, and possibly the Ring Ousel, were the only summer migrants observed or heard, but several resident or periodical visitants were reported, including the Greenshank (fresh to the district), Wild Duck, Wild Geese (small flock seen flying over), an old drake Goldeneye, Teal, Goldfinch, Ringed Plover, &c. The actual number of species noted was only 35. A Field

Vole was the only mammal reported. Mr. W. Eagle Clarke, F.L.S., M.B.O.U., supplemented Mr. Backhouse's report by stating that, having had considerable opportunities for noting the avifauna of Washburndale, he found it to comprise 47 Resident species, 22 Summer Visitants, 6 Winter Visitants, and 14 Casual Visitants, making a grand total of 74 species. As the result of the day's ramble, and the observations of the six members of the British Ornithologists' Union present, one species—the Greenshank—had been added to his list. As bearing upon what Mr. Knubley had said regarding the influence of the reservoirs on this section of the fauna, he enumerated the following species whose presence in the list was chiefly due to their attractions: the Widgeon, Goldeneye (common), Ringed Plover, Redshank, Greenshank, Oystercatcher, Cormorant, Arctic Tern, the Common and Black-headed Gulls.

For the Conchological section the report was given by one of its secretaries, Mr. John Emmet, F.L.S., of Boston Spa, who stated that the members of the section had been singularly unsuccessful, having found three common species only, viz.:—*Arion hortensis*, *Limax agrestis*, and *Zonites cellarius*. A search which proved unsuccessful had been made for the rare *Limax cinereo-niger* in the locality which had yielded it during the past summer. Mr. W. Denison Roebuck, F.L.S., then spoke of the present position of the list of Washburndale mollusks, stating that since the publication of the paper in the *Naturalist* for August 1883, several species had been added, viz.:—*Limax lævis*, *L. cinereo-niger*, *L. maximus*, *Limnæa auricularia*, *L. truncatula*, *Pisidium pusillum*, and *Cochlicopa lubrica*, thus raising the total recorded fauna to 20, a very meagre total, but perhaps as much as one could expect to be found on so unproductive a soil as the millstone grit. Referring to Mr. Knubley's query, Mr. Roebuck pointed out that the occurrence of *Limnæa auricularia* and of the ovate form of *Limnæa peregra* might be regarded as direct results of the formation of the reservoirs, inasmuch as they are forms which would hardly occur in a stream so rapid as the Washburn was before it was dammed up, and it would be of value to note any future tendencies on the part of these species to still further vary in the direction of the lacustrine forms.

For the Entomological section, the report was made by its president, Mr. Geo. T. Porritt, F.L.S., of Huddersfield, who stated that about 24 species of lepidoptera had been observed during the day, including the following 9 previously unrecorded for the locality:—*Arctia fuliginosa*, larvæ abundant on the moors; *Saturnia carpini*; *Oporabia filigrammaria*; *Eupithecia pulchellata*, larvæ found plentifully in foxglove seeds by Messrs. John Gardner of Hartlepool, and G. T. Porritt; *Cidaria psittacata* (taken by Mr. J. Grassham of Leeds); *Celæna haworthii*; *Stenopteryx hybridalis* and *Coleophora murinipennella*, larvæ found by Lord Walsingham; and lastly, *Argyresthia conjugella*, which was one of Mr. Porritt's own captures. In the sectional meeting Lord Walsingham exhibited a case containing a large number of lepidoptera which had been taken during the previous July by Mr. Thomas Eedle, whom his Lordship had had collecting for him on the estate. The captures included the following hitherto unrecorded for the district, making with the 9 taken during the day, 39 additional species:—*Satyrus tithonus*, *Nudaria mundana*, abundant; *Acidalia incanaria*; *Venusia cambricaria*, abundant; *Larentia pectinitaria*; *Emmelesia affinitata*; *E. alchemillata*; *Melanthia rubiginata*; *M. ocellata*; *Cidaria populata*; *C. pyraliata*; *C. fulvata*; *Leucania impura*; *Crambus pratellus* (nearly as dark as the Unst form); *C. margaritellus*; *Tortrix forsterana*; *Amphysa gerningana*; *Sciaphila virgaureana*; *Grapholitha trimaculana*; *G. penkleriana*; *Coccyx ustomaculana*; *Xylopoda fabriciana*; *Eupœcilia angustana*; *Xanthosetia hamana*; *Conchylis straminеana*; *Aphelia pratana*; *Grapholitha geminana* and *Dicrorampha herbosana*, both plentiful; *Depressaria pulcherrimella*, and *Pterophorus pterodactylus*. The Blubberhouses specimens exhibited, and a case of species captured in Norfolk, his lordship kindly distributed among the members of the section. Three beetles which were found by Lord Walsingham were afterwards determined by Rev. W. C. Hey, M.A., as belonging to *Pterostichus nigrita*, *Anchomenus albipes*, and *Bembidium littorale*. [In this connection it will be of value to give the names of several species found by Mr. Rudolph Rosenstock, B.A., on the 5th of July last, mostly in the vicinity of Lindley Wood Reservoir. They are *Leistus fulvibarbis* Dj., *Calathus melanocephalus* L., *Stenus canaliculatus* Gyll., *Anobium castaneum* Fab., *Liosomus*

ovatulus Clairv., *Telephorus testaceus* L., *T. bicolor* Fab., *T. rufus* L., *T. pallidus* Fab., *Cryptohypnus riparius* Fab., and *Meligethes æneus* Fab. All these species have, of course, been hitherto unrecorded for the dale, the list in August 1883 embracing the names of but four, all very conspicuous or common species.]

For the Botanical section its Phanerogamic secretary, Mr. P. F. Lee of Dewsbury, stated that to the late period of the year alone must the botanists' comparatively meagre list of observations be attributed. Out of a total number of 89 species of flowering plants and ferns, the following may be put down as the best:—*Corydalis claviculata* DC., *Rosa villosa* sub-sp. *R. mollis* Sm., *Rosa canina* var. *subcristata*, *Bidens tripartita* L., *Sonchus oleraceus* L., *Empetrum nigrum* L., *Salix pentandra* L., *Nephrodium oreopteris* Desv., and *Polypodium dryopteris* L. On the moorland one plant of white heather was found. *Scabiosa succisa* and *Campanula rotundifolia* were also gathered with white flowers. Lord Walsingham brought to the sectional meeting a good collection of dried plants characteristic of the neighbourhood.

The Rev. Wm. Fowler, M.A., of Liversedge, then reported upon the fungi which had been seen during the day, stating that about 30 species had been observed, among which were *Agaricus rutilans*; *A. umbelliferus*; *Russula nigricans*; *R. adusta*; *Boletus scaber*; and *B. chrysenteron*; also unusually fine specimens of *Lactarius rufus*, and of *Peziza aurantia* with its bi-nucleate spores.

For the Geological section the report was given by Mr. S. A. Adamson, F.G.S., of Leeds, one of its secretaries. He stated that on arrival at Blubberhouses, the geologists united with the general body of members, under the genial and experienced guidance of Lord Walsingham, and struck off at once on the Kex Gill Road. They had been particularly anxious to see some evidence of the great anticlinal which is a continuation of the one from Skipton, throwing up the Yoredale series with the Kinder Scout Grits dipping from them on the sides. The axis of this anticlinal passes probably near Bolton Bridge, and continues under Beamsley Moors, following pretty nearly the line of the high road to Blubberhouses; it continues eastward to Harrogate, and from the geological disturbance caused there by the Yoredale shales being pushed up is due the medicinal value of the Harrogate waters. The road passed through a deep romantic gorge, the result of a split in the grit rocks from the anticlinal, and since widened by denudation. The rugged escarpments on each side of the Kinder Scout Grit were very noticeable. The rocks were weathered out in some places into strange masses, some grim, others fantastic, one huge mass standing out in bold relief, like a gigantic bastion defending the valley. In other places the ravine is strewn with masses of the rock, detached from above. Evidence of the anticlinal was seen in the locality by the dip of the beds sharply to the south-east on one side of the valley, and in a short time on the other side, they were noticed to dip in the opposite dircetion. In this gorge, too, were observed some workings, where, by means of adits, the Yoredale limestone is reached. A short stay was made at a small quarry, where men were working for road-stone, a bed of calcareous grit, an intermediate in the Lower Kinder Scouts. This grit was immediately overlaid by a bed of black micaceous shale; in a specimen of this, which Mr. F. W. Branson obtained, were noticed some scales of the fossil fish *Acrolepis*. Lord Walsingham now led the way over the Moors, rich with heather bloom, to the bold escarpment of the Kinder Scout Grits overhanging Redshaw Gill. The rocks here presented a remarkable similarity in their wild and rugged appearance, arising from the same natural causes, to those at Brimham. A ponderous 'rocking stone,' easily caused to oscillate by the application of one man's strength, was pointed out, also a cavity caused by weathering, named the 'Punch Bowl.' Mr. J. E. Bedford here pointed out the furrows down the sides of some of the larger masses, the result also of weathering. Similar flutings down the sides of the 'Devil's Arrows,' near Boroughbridge, had caused at the time some discussion, the antiquarians then insisting they were artificially made, the geologists referring them to natural agencies. An inspection of these similar markings to-day proved that the latter opinion was right. A descent was then made down the precipitous side of the gill and continued into the Washburn Valley, and along thence to Lord Walsingham's country seat. Mr. J. W. Davis, F.G.S., Halifax, supplemented Mr. Adamson's remarks, speaking upon the principal geological features of the district, and expressing his satisfaction that the section had been so practically conducted.

Nov. 1885.

The chair was now taken by the Rev. Wm. Fowler, M.A., himself an ex-president of the Union, who moved a vote of thanks to Lord Walsingham for the very kind and hospitable manner in which he had received the Union and its members. This was seconded by Mr. Thomas Hick, B.A., B.Sc., of Harrogate, supported by Mr. Thomas Lister, of Barnsley, and carried with acclamation. In reply His Lordship said that it had been a particular pleasure to him to have that opportunity of welcoming the members to Blubberhouses, and to be able in any such way to contribute to the knowledge of the natural history of the district. He was also glad of the opportunity of trying in some way to repay the Union for the kind indulgence with which they received in 1884 his inefficient performance of the duties of president, and to express the great regret that he had in being unable, in consequence of having to go abroad, to accept the office for the second year, as they had asked him to do. As to the proceedings of the day he thought that what one section had lost by the lateness of the season another had gained. He hoped that he had that day acted up to the old motto of his maternal family, the Franklands—'Libera terra, liberque animus' (Frank land, frank mind)—a motto which he and his good cousin there present, Sir R. Payne-Gallwey, had inherited from Sir Robert Frankland, and they were then standing upon ground which had descended through their grandfather from the time of Queen Elizabeth, and the breaking up of the old Royal Forest of Knaresborough in 1562. It sounded like a Liberal motto, but he must confess that both he and his cousin belonged to that hard hearted and much-abused class of people, the old Tories. He hoped, however, that they would never fail to act up to their motto. This concluded the day's business. During the return drive to Harrogate the weather broke in heavy showers, after having favoured the members throughout the day with the finest and cheeriest of autumn days.

BOOK NOTICES.

Topography and Natural History of Lofthouse and its Neighbourhood; with the Diary of a Naturalist, and Rural Notes.—By George Roberts. Vol. II. Leeds: Printed for the Author. 1885. Small 8vo., pp. viii. and 258.

The author of this book has long ranked as one of the most industrious and careful of local naturalists, and we are pleased to welcome from his pen the second instalment of his book, in which his chronological record is carried from 1875 to the end of 1883. These records form a useful storehouse of facts, readily accessible to all who are working especially at the correlation of phenological phenomena. But the book contains more than this. Apart from the topography, a subject which lies outside our scope, we find at the outset some very interesting remarks on the fauna and flora, especially in view of the influence—mostly destructive—which is exercised by the polluted atmosphere of the West Riding manufacturing district, near the north-eastern verge of which Lofthouse stands. A list of the rarer flowering plants and ferns of the district is given at the end, as an addition to previous lists, and is followed by a molluscan fauna of Lofthouse and district.

Report on the Migration of Birds in the Spring and Autumn of 1884.—By Mr. J. A. Harvie Brown, Mr. J. Cordeaux, Mr. R. M. Barrington, Mr. G. A. More, and Mr. W. Eagle Clarke. Sixth Report (Vol. II., No. I.). West, Newman & Co., 1885. Price 2s.

We regret that pressure of matter on our available space has prevented our earlier noticing the Migration Report. The one before us is bulkier than formerly, partly because the West Coast of England is included, after two or three years' omission, and partly because of the inevitable tendency to expansion which works of this class usually possess. Indeed, the greatest care seems to be necessary on the part of the reporters in the future in order to counteract this tendency to growth in their work, as well as to present it in a digested and arranged plan. This leads one to inquire why each reporter is left entirely to his own devices in framing his report. Would it not be preferable that the Committee should agree upon one uniform plan of working up their material, so as to facilitate comparison in the first place of the reports in the same volume, and in the second place of the reports for different years? So great is the mass of valuable information which is brought

together in this way by direct appeal to lighthouse and lightship keepers, and the assistance of well-known ornithologists, that uniformity of method and perspicuity of treatment are highly indispensable. A feature in the present series of reports is that an attempt is being made to secure a greater approach to accuracy by the obviously simple means of inducing the observers to send up wings and legs of such birds as they are not perfectly well acquainted with, and, in the case of a few Irish stations, by furnishing the observers with a copy of some work on British Birds. The reporters are to be congratulated on the value of their work, and still more for the pluck with which year after year they incur personally somewhat heavy pecuniary loss for the cause of science. This is not as it should be; it is not just that they who do the work should be saddled with this additional tax, and we would suggest that the example of the Zoological Record Association be followed. Let a 'Bird Migration Association' be formed at a moderate rate of subscription, for many ornithologists—and others too—would no doubt be ready and willing to contribute to the cause. Such an association could, if funds happened to flow in, furnish ornithological text-books to the libraries of the lighthouses, and in various ways further the cause of science in this particular direction.—R.

NOTES AND NEWS.

The Entomological Society of London, a body which was founded in 1833, and has for a long succession of years rendered valuable service to the science, has now received a Royal Charter of Incorporation, so that from henceforth its members will be styled 'Fellows,' and the society itself take rank more accordant with its true place among the learned bodies of the metropolis.

We are pleased to note that the Rev. H. A. Macpherson and Mr. W. Duckworth have in the press a work on the Birds of Cumberland, with Notes on the Birds of Westmoreland. Its appearance will be looked forward to with pleasure, as a valuable contribution to the natural history of the North of England, written by ornithologists of high standing, and in every way equal to their task.

The butterflies of our islands are supposed to be so well known that it is of great interest to hear of an addition to their scanty number. This year we have one in the form of a common South European blue butterfly (*Lycæna argiades*, one of the 'tailed blues') which has occurred in one or two Dorsetshire localities, where no doubt it has been passed over by collectors without examination. Now that it has turned up in one county, it may be expected to be found in others lying along the south-western coast of England.

Our readers will have noticed that Silloth (Cumberland) has ceased to appear in our meteorological page. The Rev. F. Redford, M.A., who has preserved his records unbroken for upwards of thirty years, now finds that serious failure of health compels him to discontinue his observations, and we may well be sure that it is no light reason which has brought about the cessation of so valuable a series of records, by which he has conferred lustre upon his own name, and rendered that of Silloth classical in the annals of British meteorology. May the evening of his life be as beautiful and tranquil as the brightest, calmest, and most glorious sunset which he has ever witnessed in the course of his meteorological investigations!

The Louth Naturalists' Society continues to flourish. It held its first annual meeting on the 14th July, at which a very satisfactory report and balance sheet were presented. We note that the system of keeping records which has been adopted has greatly encouraged practical observation. The list of recorders includes the names of Messrs. J. Larder (zoology), W. L. Wells (ornithology), R. W. Goulding (invertebrata), and H. W. Kew (botany). The last named also acts as hon. secretary and treasurer, while the Rev. W. W. Fowler, M.A., of Lincoln, gives his support to the society as patron. Mr. E. Hall is president, and Mr. A. R. Yeoman, M.A., vice-president. We may state as pertinent to our text that from some of the members we have received interesting lists and notes for incorporation in the series of papers on Lincolnshire natural history which is to form one of the special features of next year's *Naturalist*.

METEOROLOGICAL RETURNS FOR AUGUST 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

	Name of Station; its height above sea-level; and Name of Observer.	Atmospheric pressure.	TEMPERATURE (IN SHADE).					RAINFALL.			
				Extremes.						Greatest Fall in a Single Day.	
				Highest Maximum registered.		Lowest Minimum registered.					
		Mean Height of Barometer (reduced to zero and to sea-level).	Mean Temperature for Month.	Amount.	Date.	Amount.	Date.	Total Rain Collected.	Number of Days on which there fell 0·01 inch or more.	Amount.	Date.
	ISLE OF MAN:	inch	deg.	deg.		deg.		inch		inch	
	Cronkbourne (140 ft.)..... A. W. Moore, F.M.S.....		55·6	69·4	22nd	34·6	14th	2·156	9	0·673	8th
W. COAST:	Barrow-in-Furness (—).. W. S. Whitworth	29·974	56·5	67·0	22nd	43·0	30th	1·620	10	0·410	12th
	Liverpool (Bidston) (—) J. Hartnup, jun.	29·977	57·0	68·0	15th	44·0	29th	1·930	12	0·430	5th
CENTRAL HILL REG.:	Newton-Reigny (Penrith) (577ft.) T. G. Benn, F.M.S.	29·981	52·5	69·0	6th, 16th	31·0	30th	2·190	11	0·880	5th
	Hawes Junction (1,135 ft.) Station-master	*28·748	51·7	67·0	1st	34·0	14th	3·250	12	0·890	10th
	Stonyhurst (381 ft.)..... Rev. S. J. Perry, F.R.S.										
EASTERN LOWLAND REGION:	North Shields (—) . .. J. W. Irvine	29·969	54·80	70·0	16th	40·0	14th, 30th	3·330	11	1·720	5th
	Scarborough (120 ft.) .... Allan Rowntree, F.M.S.										
	York Museum (—) ..... The Curator	29·979	56·40	75·0	16th	39·0	14th, 27th	1·640	12	0·620	6th
	Moortown, Leeds (500 ft.) G. Paul, F.G.S., F.M.S.	29·970	53·86	69·0	16th	39·0	14th, 15th	1·835	8	0·040	7th
	Hull, Derringham (10 ft.) Wm. Lawton.....	*30·090	55·20	76·0	16th	37·5	27th	1·940	8	0·520	7th
	Spurn Point (19 ft.)..... J. B. Smith	29·955	56·70	72·0	10th	47·0	14th	2·130	8	0·520	21st
	Louth, Lincs. (111 ft.).... T. W. Wallis.....	29·980	56·87	75·0	10th	38·0	14th	1·840	9	0·540	21st
	Boston, Lincs. (24 ft.).... W. H. Wheeler, M.In.C.E.										
	Loughborough (—) ..... W. Berridge, F.M.S.....	29·991	57·4	76·0	25th	38·0	14th	2·830	13	0·780	21st
	London	29·986	59·1	80·0	17th	41·0	14th	0·930	10	0·380	26th

* Not reduced to sea-level.

Wind.—1st Division (Isle of Man) N. 8, N.E. 7, E. 15, S.E. 2, S. 5, S.W. 3, W. 4, N.W. 14, calm 4 days.
2nd Division: N. 3½, N.E. 8, E. 4, S.E. 4½, S. 2, S.W. 1, W. 2½, N.W. 5½, calm 0 day.
3rd Division: N. 4, N.E. 4, E. 4½, S.E. 1½, S. 5¾, S.W. 3¼, W. 4¼, N.W. 1½, calm 4¼ days.
4th Division: N. 7, N.E. 5½, E. 3¼, S.E. 1, S. 3, S.W. 3¼, W. 4¼, N.W. 3½, calm 0¾ day.
London: N. 3, N.E. 5, E. 4, S.E. 1, S. 2, S.W. 5, W. 3, N.W. 2, calm 6 days.

Gales.—Isle of Man, Gales on 10th, 12th, and 13th; Barrow and Liverpool each one day; Shields, 2 days; Leeds, 1 day; Hull, 3 days; Spurn on 2 days; Loughborough, 8 days; London, 1 day.

Bright Sunshine.—Isle of Man, 176·7 hours; Newton-Reigny, 119·1 hours; Hull, 100·3 hours.

Highest Temperature in Sun—Isle of Man, 131·7° on 11th; Newton-Reigny, 126·2° on 16th; Leeds, 117·3° on 17th; Hull, 103·5° on 15th.

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MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

Contents:

PAGE

Occurrence of Sowerby's Whale on the Yorkshire Coast—*T. Southwell, F.Z.S.*, and *W. Eagle Clarke, F.L.S.* 385-6

Grampus (Orca Gladiator) in the Humber—*Thomas Birks* 386

Spotted Eagle in Northumberland—*H. T. Archer*.. 387

Occurrence of Desert Chat in Yorkshire—*W. Eagle Clarke, F.L.S.* 387

Dispersion of Plants in Yorkshire: Notes on Aliens and Casuals recently observed in the Wakefield District—*Geo. Roberts* .. .. 389 to 393

Mammalian Note:— 393
Otter near Louth, Lincolnshire—*H. Wallis Kew.*

Ornithological Note:— 394
Whiskered Tern in Yorkshire—*Thomas Southwell, F.Z.S.*

Entomological Note:— 393
Heliothis peltigera in the North—*J. E. Robson.*

Bibliography of 1884 (Part VIII.—Geology and Palæontology) .. .. .. 394 to 406

Meteorological Returns for September 1885—(Edited by *Geo. Paul, F.G.S., F.R.Met.S.*) 388

Index to the present volume .. .. 407 to 412

Title-page and Preface.

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Natural History Journal for November. 1885. [J. E. Clark, Editor.
Philadelphia Academy.—Proceedings, Part II., April-July 1885. [Academy.
On some recently discovered Insecta from Carboniferous and Silurian Rocks.—By Herbert Goss, F.L.S., 8vo, reprint, 21 pages. [Author.
Liverpool Science Students' Association.—Report, Session 1884-5. [Association.
Botanical Notes from Caithness and Sutherland, July 1885.—By Rev. H. E. Fox and F. J. Hanbury; Reprint. [Authors.
Zeitschrift für die gesammte Ornithologie, 1885, Heft 3. [Dr. Madarasz, Editor.
Auk, a quarterly journal of Ornithology.—October 1885. [Editor.
Lord Lilford's Coloured Plates of British Birds. [Lord Lilford.
Manx Note Book, October 1885. [A. W. Moore, Editor.
British Zoophytes.—By A. S. Pennington, 8vo, pp. 363, and 24 plates. [Lovell Reeve & Co.
Smithsonian Institution.—Report for 1883. [The Institution.
Midland Naturalist for November 1885. [The Editors.
The Young Naturalist for November 1885. [J. E. Robson, Editor.
The Naturalist's World for November 1885. [P. Lund, Editor.
Illustrated Science Monthly for November 1885. [Bogue, Publisher.
Science Gossip for November 1885. [Chatto and Windus, Publishers.

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ON THE OCCURRENCE OF SOWERBY'S WHALE (MESOPLODON BIDENS) ON THE YORKSHIRE COAST.

By THOS. SOUTHWELL, F.Z.S., and WM. EAGLE CLARKE, F.L.S.

On the 11th September last, Professor Turner communicated to the British Association, then assembled at Aberdeen, a paper on the anatomy of Sowerby's Whale, *Mesoplodon bidens* Sowerby (*M. sowerbiensis* Blainville), the material for which was mainly derived from the dissection of an individual obtained on the 25th of the preceding month of May, in Voxter Voe, on the north-east portion of the main island of Shetland, which island had already become noted as having yielded a previous specimen of this species, as well as two other ziphoids.

Seeing the interest which attaches to this rare Cetacean, we have great pleasure in being able to record the occurrence of yet another individual of the same species, the first we believe which has been met with on the English coast; but we regret to add that owing to the ignorance of its captors as to the value of their prize, the carcase was cast adrift and destroyed before the occurrence came to our knowledge, and was thus irretrievably lost to science. This is the more to be regretted from the fact that (mainly through the excellent use which Professor Turner has made of recent opportunities), at present more is known with regard to the skeleton and the anatomy of the soft parts of Sowerby's Whale than of its external appearance, added to which there are still several points in the anatomy which it would be desirable to solve.

On the 11th September last, on the same day on which Professor Turner made the communication to the British Association before referred to, a Cetacean was left stranded in shallow water just inside Spurn Head, at a spot known as the Chalk Bank. As the tide receded the animal made great efforts to get off into deep water, and lashed up the sand with its tail, till a large depression was formed in which it lay. Observing the commotion, two men rowed up from a sloop which was riding at anchor in the entrance to the Humber, near to the spot, and despatched it with their oars. The animal was seen alive by several persons, amongst them by Miss Rose Smith, daughter of the chief light-keeper at the Spurn, and Mr. T. Winson, coxswain of the lifeboat 'Spurn,' to whom jointly we are indebted for the information we have been able to glean; for under the impression that it was a Common Bottlenose Whale (*H. rostratus*), a person named Hopper 'chopped it up' to obtain the oil, and the remains, with the exception of the tail, were set afloat, and drifted

out to sea beyond the possibility of recovery. From a sketch kindly supplied by Miss Rose Smith, and some interesting particulars furnished by Mr. Thomas Winson, there is not the slightest doubt that the animal was Sowerby's Whale, probably a full-grown male.

Sowerby's Whale has been met with certainly three, possibly four, times in Scotland; twice in Ireland; once on the English coast; seven times at various localities on the Continent, and once in the United States. It is about 16 feet long, the beak long and pointed, and the jaws armed with two very singular teeth placed one on each side the lower jaw; they are flattened, and the exposed portion, somewhat triangular in form, projecting tusk-like outside the upper lip when the mouth is closed; no other visible teeth are present. The colour is dark slate above, lighter on the sides, and almost white below, the beak being a little lighter than the head. The flippers are small, and the tail-fin without the notch usually observed in the centre of that organ in other Cetaceans.

GRAMPUS (ORCA GLADIATOR) IN THE HUMBER.

By THOMAS BIRKS,
Hull.

A Grampus (*Orca gladiator*) was captured on Whiston Ness, where the rivers Ouse and Trent join and form the estuary of the Humber, on November 1st. It had been struck with a boat-hook the day previous, but had broken away from its pursuers. When found it was stranded on the Ness, but alive. The animal was brought to Hull, and exhibited as a 'Zebra Whale' in various places in the town. It was disembowelled, and a fœtus taken from it about 6 feet long. This, however, which soon showed signs of decomposition, was buried in a manure heap, from which the head was with some difficulty recovered. The animal measured about 21 feet long, but measurements of girth were not taken. The white parts of the underside extended behind the pectoral fins almost to the back, and two distinct grey 'saddle' marks were well defined on each side behind the dorsal fin.

Seeing no chance of this being acquired for the Hull or indeed a Yorkshire museum, the writer communicated with Dr. Günther, who purchased it for the national collection at South Kensington, to where it has now been forwarded.

I think this is the first verified record of the occurrence of *O. gladiator* in the Ouse or the Humber, most of the printed records being referable to other species.

[Although the species is already on record as occurring in the Humber estuary, the Cetacea so seldom fall under the notice of competent authorities, that authentic records are of great value.—Eds.]

SPOTTED EAGLE IN NORTHUMBERLAND.

By H. T. ARCHER,
Newcastle-on-Tyne.

I HAVE examined—in the possession of Mr. Duncan, to whom it is intrusted for preservation—a magnificent specimen of the Spotted Eagle, shot at Cresswell, on the Northumberland coast, on the 31st of October. The general colouration is deep brown, with spots of a yellowish white; eye, hazel. In length it is 28 inches, and the extent of the wings 5 feet 7 inches. It had nothing but a little grass in its stomach when dissected; and Mr. Duncan considers the bird a young one. The figure in Morris's 'British Birds' well represents it.

[We wrote Mr. John Hancock, whom we were informed had examined the bird, for his opinion on its specific identity, and he kindly replied: 'The Eagle shot in Northumberland is the *Aquila Nœvia*, or the true Indian form (a young bird of the year).' We believe this to be the eighth occurrence in Great Britain and Ireland, the fifth English specimen, but the first in the Northern Counties.—Eds.]

OCCURRENCE OF THE DESERT CHAT (SAXICOLA DESERTI) IN YORKSHIRE.

By WM. EAGLE CLARKE, F.L.S.,
Member of the British Ornithologists' Union, and of the British Association Committee on the Migration of Birds.

THROUGH the kindness of Mr. P. W. Lawton, I received what purported to be 'a light variety of Wheatear,' shot between the villages of Easington and Kilnsea, on the Holderness coast, on the 17th of October last. A glance at the specimen at once suggested a rarity, an examination a suspicion that it was *Saxicola deserti*. This surmise as to the species has been confirmed by Prof. Newton and Mr. H. E. Dresser, who most kindly examined and compared the bird, whose tailless state rendered identification a matter of some difficulty. The specimen, which is a female, though it was too much injured to prove it to be such by dissection, is now in my possession, and was exhibited by Mr. Dresser at the meeting of the Zoological Society on the 17th November. It is the first English specimen, the second British—one was shot in Clackmannanshire on the 26th of November, 1880—and, I believe, the fourth occurrence of the species in Western Europe, two having been obtained on Heligoland. The bird appears to be an accidental visitant to countries north of the Mediterranean, its true home being the desert regions of northern and north-eastern Africa, extending eastwards through Persia to north-west India.

METEOROLOGICAL RETURNS FOR SEPTEMBER 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

	Name of Station; its height above sea-level; and Name of Observer.	Atmospheric pressure. Mean Height of Barometer (reduced to zero and to sea-level).	Temperature (in shade). Mean Temperature for Month.	Extremes. Highest Maximum registered. Amount.	Highest Maximum registered. Date.	Lowest Minimum registered. Amount.	Lowest Minimum registered. Date.	Rainfall. Total Rain Collected.	Number of Days on which there fell 0·01 inch or more.	Greatest Fall in a Single Day. Amount.	Greatest Fall in a Single Day. Date.
	ISLE OF MAN:	inch	deg.	deg.		deg.		inch		inch	
	Cronkbourne (140 ft.).... A. W. Moore, F.M.S.....	29·779	52·56	62·4	3rd, 7th	33·3	27th	6·274	20	1·338	11th
W. COAST:	Barrow-in-Furness (—).. W. S. Whitworth	29·788	53·7	65·0	4th	38·0	26th, 27th	4·480	22	0·880	8th
W. COAST:	Liverpool (Bidston) (—) J. Hartnup, jun.	29·815	54·5	68·0	15th	39·0	26th	4·130	22	0·430	28th
CENTRAL HILL REG.:	Newton-Reigny (Penrith) (577 ft.) T. G. Benn, F.M.S.	29·784	50·0	64·6	3rd	29·8	26th	4·310	25	0·550	5th
CENTRAL HILL REG.:	Hawes Junction (1,135 ft.) Station-master	*28·568	48·4	62·0	4th, 15th	30·0	26th	8·130	26	1·540	30th
CENTRAL HILL REG.:	Stonyhurst (381 ft.)..... Rev. S. J. Perry, F.R.S.	29·808	60·8	68·2	3rd	29·8	25th	5·246	22	0·671	14th
EASTERN LOWLAND REGION:	North Shields (—) . .. J. W. Irvine	29·769	52·7	70·0	15th	34·0	26th	2·140	16	0·340	2nd, 28th
EASTERN LOWLAND REGION:	Scarborough (120 ft.) .... Allan Rowntree, F.M.S.	29·799	54·05	70·0	15th	38·8	26th	2·530	19	0·400	26th
EASTERN LOWLAND REGION:	York Museum (—) ..... The Curator	29·827	53·5	72·0	15th	30·0	26th	1·970	19	0·350	26th
EASTERN LOWLAND REGION:	Moortown, Leeds (500 ft.) G. Paul, F.G.S., F.M.S.	29·814	51·55	67·1	15th	32·5	26th	3·890	22	1·000	2nd
EASTERN LOWLAND REGION:	Hull, Derringham (10 ft.) Wm. Lawton.....	*30·000	53·00	74·0	15th	31·5	26th	2·100	18	0·380	26th
EASTERN LOWLAND REGION:	Spurn Point (19 ft.)..... J. B. Smith	29·816	54·40	69·0	15th	40·0	26th	3·140	18	0·630	26th
EASTERN LOWLAND REGION:	Louth, Lincs. (111 ft.).... T. W. Wallis.....	29·840	52·93	73·0	15th	34·0	26th	4·780	21	0·760	3rd
EASTERN LOWLAND REGION:	Boston, Lincs. (24 ft.).... W. H. Wheeler, M.In.C.E.	29·850	53·10	75·0	15th	34·0	26th	3·110	19	0·690	10th
EASTERN LOWLAND REGION:	Loughborough (—) ..... W. Berridge, F.M.S.....	29·864	54·70	75·0	15th	30·0	28th	3·440	20	0·940	10th
	London	29·899	56·2	76·0	15th	32·0	27th	4·060	21	1·030	10th

* Not reduced to sea-level.

Wind.—1st Division (Isle of Man) N. 3, N.E. 0, E. 5, S.E. 3, S. 6, S.W. 21, W. 10, N.W. 8, calm 4 days.
2nd Division: N. 3½, N.E. 2½, E. 1, S.E. 6, S. 4½, S.W. 5, W. 4½, N.W. 3, calm 0 day.
3rd Division: N. 2½, N.E. 1¼, E. 1¼, S.E. 2, S. 3½, S.W. 7, W. 9¼, N.W. 1, calm 2 days.
4th Division: N. 2, N.E. 2½, E. ¼, S.E. 2, S. 4¼, S.W. 9, W. 5, N.W. 4½, calm ½ day.

Gales.—1st Division, squally on 19 days; 2nd Division, 2 days; 3rd Division, 1 day; 4th Division, 28 days.

Snow.—On the 26th at Newton Reigny and at London, 1 day.

Bright Sunshine.—Isle of Man, 146 hours; Newton-Reigny, 130½ hours; Stonyhurst, 130 hours; and Hull, 130 hours.

Highest Temperature in Sun—Isle of Man, 127·0° on 4th; Newton-Reigny, 120·2° on 3rd; Stonyhurst, 136·3° on 3rd; Leeds, Moortown, 116·1° on 17th; and Hull, 97·0° on 3rd.

DISPERSION OF PLANTS IN YORKSHIRE: NOTES ON ALIENS AND CASUALS RECENTLY OBSERVED IN THE WAKEFIELD DISTRICT.

By GEO. ROBERTS,

Lofthouse, near Wakefield; *Author of the 'Topography and Natural History of Lofthouse and its Neighbourhood.'*

There are now so many means of intercommunication between the south of England and the north, and between the Continent and the British Isles, that it is not surprising that Continental or south of England plants should appear and become more or less established in the northern counties in places where, half a century ago, they were entirely unknown. In modern times Aliens have probably greatly increased. Railways have greatly facilitated the diffusion of plants. Seeds are constantly liable to be shaken from goods on railway trucks during transit; soil and rubbish, containing seeds or roots of perennial plants, are often removed long distances along the railway as ballast; and the embankments and cuttings, being waste and seldom disturbed, offer suitable locations for the growth and propagation of seeds or roots thus scattered or removed. From the high banks the seeds will be constantly blown, or by other agencies dispersed, to the adjoining land.

Another mode of introduction and dispersion is to be found in the extensive and increasing importation of foreign agricultural seeds. These foreign seeds—wheat, oats, barley, beans, grass, clover, flax, &c.—all contain a greater or less quantity of seeds of weeds, which, when sown, grow up with the ordinary crop. The distribution of weed-seeds is further greatly facilitated by the present practice of thrashing grain by steam machines in the fields. In this case the seeds are blown and scattered in all directions over the land, whereas, formerly, the refuse seeds were collected together and burnt, or otherwise destroyed. Foreign Reeds, Bulrush (*Scirpus lacustris*), and other plants containing dried seeds, are also introduced from the Continent for thatching stacks and houses. Foreign hay is often imported, which will contain quantities of the seeds of Continental grasses, clovers and weeds. Various artificial manures — such as bone-dust, mill-shoddy, cotton-waste, rape-cake, and guano—also contain large quantities of exotic seeds. Numbers of roots of perennial plants, bulbs, and seeds of weeds and garden plants are continually landed on canal-banks with the refuse of ash-pits, market sweepings, timber, stone, and other merchandise. To these artificial means of dispersion may be added the natural ones, as by the transportation of seeds by rivers and smaller streams, by the winds, or by

birds and other animals, and on floating caddis cases. Thus, as some of our native plants become extinct, others appear which help to maintain, if not augment, the aggregate of our flora. Indeed, this gradual replacement of one flora by another, of annuals by perennials, is constantly (if slowly acting) going on, not only on railway banks and near our towns, but in the far away rural districts, the higher and moorlands alone excepted.

The following plants, a number of which are Aliens, have been collected or observed mainly in the Wakefield District during the years 1883-4-5. The rarer species, I may add (both exotics and British), have been either named by Dr. Lees, or sent to the Royal Botanic Gardens for verification.

The exotic Aliens are marked by a double asterisk; the single asterisk is prefixed to Casuals which have not hitherto been frequently found so far north as Yorkshire, but which are constant integers in the flora of the south or south-west of England.

Thalictrum flavum L. Wressle, E.R.

Berberis vulgaris L. Plentiful between Knottingley and Womersley in the roadside hedges.

Papaver somniferum L. Canal-side, Woodlesford; Sandal.

Corydalis lutea DC. Old wall in the Abbey ground, Knaresborough, 1884.

Arabis thaliana L. Knottingley.

** **Sisymbrium orientale** L. = **columnæ** Jacq. Waste ground at Sandal. (See Nat., vol. i., p. 230. First Series.)

** **Sisymbrium junceum** MB. Waste ground at Sandal.

Sisymbrium sophia L. Knottingley; Sandal. (Flamborough, P. Inchbald.)

Sinapis alba L. Clover field at Methley.

** **Sinapis arvensis** v. **orientalis** Murr. Sandal.

Diplotaxis tenuifolia DC. Old walls at Pontefract Castle, 1885.

** **Eruca sativa** Lamk. Quarry and waste ground at Sandal. (See Nat., vol. i., p. 204.)

Camelina sativa Cr. Clover field at Methley.

** **Neslia paniculata** Desv. Clover field at Methley.

** **Rapistrum orientale** DC. Sandal.

* **Raphanus sativus** L. Footpath-side, Methley.

* **Lepidium draba** L. Waste ground at Sandal.

** **Reseda odorata** L. Oat field at Stanley.

** **Saponaria vaccaria** L. Potato field at Lofthouse; one plant. Waste ground at Sandal; plentiful. Clover field at Methley; frequent. (Wetherby, J. S. Wesley, 1879.) This species is

said to have been first observed at Herne Bay in 1832; it has occurred since in many places in England and Scotland. South European. (See Nat., vol. i., p. 262.)

** **Gypsophila porrigens** Boiss. Old quarry at Sandal. A curious Caryophyll, with ovate, hairy, opposite leaves like a Lychnis, and a dichotomous panicle of small flowers, with long, wavy, hair-like pedicels.

** **Malva parviflora** L. Clover field at Methley.

Geranium phæum L. Wressle Castle. (Walton, Mr. Cooper.)

* **Medicago falcata** L. Waste ground at Sandal.

Medicago sativa L. Frequent.

* **Medicago lappacea** Desr., var. **denticulata** W. Lofthouse, 1884; Wressle, 1884; canal side, Woodlesford, 1885.

* **Medicago lappacea** var. **apiculata** W. Near Cawood, 1884.

Melilotus officinalis Desr. Common now on waste ground and railway banks.

** **Melilotus indica** All. = **parviflora** Desf. Lofthouse, 1882; Cawood, 1884; Castleford; Woodlesford; Sandal; Methley; Doncaster. Appears to be well established and spreading.

Melilotus alba Desr. Lofthouse, 1883, 10 feet high. Sandal, J. Wilcock.

* **Trifolium incarnatum** L. Sheep pasture at Kippax, growing with the white clover.

* **Trifolium resupinatum** L. On the border of a manure heap at Cawood; waste ground at Sandal; clover field at Methley. Very sparingly at each place.

Trifolium arvense L. Sandal.

* **Trifolium ochroleucum** L. var. **intermedium**. Sandal.

Anthyllis vulneraria L. On railway bank at Methley—off limestone.

Astragalus hypoglottis L. Aberford; Kippax; Glass Houghton.

* **Lathyrus aphaca** L. Field at Cawood, one or two plants.

Comarum palustre L. In the middle of a small marsh at Stanley.

** **Potentilla norvegica** L. Canal banks at Stanley; canal walls at Woodlesford; stony banks of the river Calder, near Castleford. The two last-named stations are new ones, showing the plant to be spreading. Now admitted into Hooker's Flora.

Rosa canina L., var. **verticillacantha** Merat. Wressle.

* **Bupleurum rotundifolium** L. (Sandal, Mr. Cooper.)

Helosciadium nodiflorum Koch. Fairburn, near the Aire.

Sium angustifolium L. Fairburn, in a wide ditch near the Aire.

Sium latifolium L. Wressle, near the Derwent.

Œnanthe crocata L. Near the canal at Woodlesford.

Torilis nodosa Gaert. Field at Methley; Ardsley.

Asperula cynanchica L. Marl quarry near Aberford.

Dipsacus sylvestris L. Railway banks and quarry sides at Knottingley.

** **Cephalaria syriaca** Schrad. Waste ground at Sandal.

Eupatorium cannabinum L. Deep ditches near Womersley.

Erigeron acris L. Fairburn; Castleford.

Inula conyza L. Fairburn; Castleford. I have always found these two species growing together.

Matricaria chamomilla L., var. **discoidea**. Clover field at Methley.

Senecio erucæfolius L. Aberford; Castleford.

** **Ambrosia artemisiæfolia**. Clover field at Methley.

* **Centauria solstitialis** L. Waste ground at Sandal, in two places.

** **Centauria melitensis** L. (= **collina**). Clover field at Methley. (A Maltese plant growing with increasing frequency about flour mills in many parts of the country. 'Below Yore Mills, Aysgarth, abundantly in 1884 and 1885.' F. A. Lees.)

Carduus nutans L. Methley.

Carduus tenuiflorus Curt. Old quarry at Sandal.

** **Atractylis** sp. Field at Methley.

** **Cichorium endivia** Don. Clover field at Methley.

* **Lactuca virosa** L. Old quarry at Sandal.

Lysimachia vulgaris L. Ditches at Wressle, E.R.

Lysimachia nummularia L. Wressle; Fairburn.

Anagallis arvensis L., var. **cærulea**. Waste ground at Sandal.

Hottonia palustris L. Fairburn; marsh at Stanley.

Ligustrum vulgare L. Common on waste ground, and in the hedges in lanes below Castleford, apparently native.

** **Gilia capitata** Don. Methley.

** **Amsinckia lycopsoides** Lehm. Methley. (Like the Centaurea above mentioned this, too, is now occurring all over the country wherever the siftings of Californian grain get on the land. It has turned up during the last three or four years at Bingley (*West*), Conisborough (*Hasselby*, *Lee*), Aysgarth, Goole, Tadcaster, Mirfield, &c.—F.A.L.)

Anchusa sempervirens L. Waste ground at Sandal.

Lithospermum officinale L. Lane between Castleford and Ferrybridge.

Myosotis collina Reich. Near Aberford.

Atropa belladonna L. Abbey grounds, Knaresborough, 1884; a reappearance.

** **Plantago lagopus** L. Waste ground at Sandal.

Linaria minor Desf. Knottingley; pea field near Kippax.

Calamintha acinos Clairv. Disused lime quarry at Fairburn.

Chenopodium vulvaria L. = **olidum** Curt. Waste ground at Sandal.

* **Chenopodium murale** L. Canal side, below Castleford.

* **Chenopodium glaucum** L. Border of a manure heap, near the railway station at Methley; also near Pontefract.

* **Beta maritima** L. Clover field at Methley; and also on the hauling path, below Castleford.

Beta vulgaris L. Not unfrequent.

Salix triandra L. Wressle, near the Derwent.

Orchis pyramidalis L. Near Aberford, and near Glass Houghton.

Sparganium ramosum Curtis. Willow garth at Methley. Pugneys, near Wakefield, frequent. Not the new segregate (*neglectum*), as at first thought to be.

Acorus calamus L. Plentiful in an off-set canal at Fairburn, in flower, July 14th, 1885.

Carex hirta L. Railway Station yard at Kippax.

Carex vulpina L. Canal bank at Fairburn.

Bromus erectus Sm. Waste ground near Kippax.

NOTE ON MAMMALIA.

Otter near Louth, Lincolnshire.—A specimen of this mammal (*Lutra vulgaris*), weighing 12 lbs., was caught at 'Maltby Springs' near Louth, on 3rd April, 1885.—H. Wallis Kew, Lee Street, Louth.

ORNITHOLOGICAL NOTE.

Whiskered Tern (Hydrochelidon hybrida) in Yorkshire.—At the dispersal of the very fine collection of birds formerly belonging to the late Mr. Robert Rising, of Horsey, near Great Yarmouth, most of which were of special interest to Norfolk ornithologists, there were a few birds with the history of which I was not acquainted; one of these was a Whiskered Tern—*Hydrochelidon hybrida* (Pall.). Upon inquiry of Capt. Rising, with regard to this bird, he kindly referred me to Mr. Geo. Frederick, in whose collection it formerly was, and that gentleman was so good as to inform me that the bird 'was shot on the river Swale, at Hornby Castle, in Yorkshire, by one of the Duke of Leeds' gamekeepers in 1842.' As this bird has not, I believe, been recorded, and I think will be an addition to the Yorkshire list, I have much pleasure in placing it on record.—Thomas Southwell, Norwich, 5th November, 1885.

ENTOMOLOGICAL NOTE.

Heliothis peltigera in the North.—Mr. Porritt is mistaken in supposing that his specimen of this insect is the most northerly capture. I have two in my collection, one taken here, and one at Byers Green, some twelve or fourteen miles further north, and Mr. Gardner has also a specimen in his collection that he took here. These were all duly recorded at the time, but I suppose they have escaped Mr. Porritt's notice.—John E. Robson, Hartlepool, October 25th, 1885.

BIBLIOGRAPHY OF 1884:

Papers and records published during the year with respect to the natural history and physical features of the North of England.

PART VIII.—GEOLOGY AND PALÆONTOLOGY.

In the preparation of this portion of the Bibliography, the Editors have had most valuable assistance from various able geologists. They are indebted to Prof. G. A. Lebour, M.A., F.G.S., of the Newcastle College of Physical Science, for numerous titles and abstracts of papers relating to Northumberland and Durham; and they are under a similar obligation to Mr. Alfred Harker, M.A., F.G.S., of the Woodwardian Museum at Cambridge, for assistance in respect of Yorkshire geology. They have also to thank Mr. Samuel A. Adamson, F.G.S., Secretary of the Leeds Geological Association and of the Geological Section of the Yorkshire Naturalists' Union, for his very great kindness in going through the whole of the manuscript and supplying abstracts for all the papers which had not been already abstracted.

ANONYMOUS (no signature). **Nottingham.**

Geological Map of Nottingham. Midl. Nat., May, vii. 135-137.

This map is made from the ordnance plan, re-surveyed and amended in detail by J. Shipman, of Nottingham. It contains the results of all the latest researches into the geology of Nottingham.

THOMAS ATTHEY. **Northumberland.**

Notes on the Vertebral Column and other Remains of Loxomma Allmanni, Huxley. N. H. Trans. Northumb., Durham, and Newc., viii. 46-50 (1884).

Detailed notes on a specimen from a pit at Newsham, near Blyth. These osseous remains existed on nine narrow and irregular slabs of black shale; they are the remains of part of the trunk only; the head, part of the tail, and extremities were either not present at the same place, or had not been observed. They were named in the first instance *Macrosaurus polyspondylus*. Mr. Atthey was working on the above specimen when he was attacked with paralysis, which unfortunately ended his labours, leading to his death.

E. I. J. BROWELL. **Northumberland, Durham, Yorkshire.**

Address to . . . . . the Tyneside Naturalists' Field Club, ... May 11th, 1882. Nat. Hist. Trans. Northumb., Durham, and Newc., viii. 159 to 168 (1884).

Notes palæontological and geological observations at the 1881 field meetings, viz.:—Corbridge-on-Tyne, Whit-Monday; Middleton-in-Teesdale, Durham and Yorkshire, June 29-30th; Greenhead, Northumberland; &c.

G. H. BULMAN. **Northumberland.**

A Hypothetical Lake. The Household Magazine for 1884, pp.

Refers to a theory attributing the form of the Tyne Valley about Corbridge to the presence there of an ancient lake. The existence of such a lake is clearly disproved by the author.

R. T. BURNETT. **Northumberland, Cumberland, Yorkshire, Derbyshire.**

Formation and Distribution of the Carboniferous Limestone [Abstract only]. Rep. Manch. Sci. Stud. Assoc. for 1883, p. 49.

W. D. CARR and A. STRAHAN. **Lincolnshire.**

Excursion to Lincoln, April 14th and 15th, 1884. Proc. Geologists' Assoc., July [issued December], viii. 383-389, with geological Map and woodcuts.

Describes a splendid section at the brickyard of Messrs. Swan Brothers, exposing all the beds from the Oolite to within 20 ft. of the base of the Upper Lias, about 80 ft. in all, 70 ft. of which is in the Lias, which is here clearly definable into 3 well-marked zones, those of A. bifrons, A. communis, and A. serpentinus.

R. CARTER. **Yorkshire.**

On the Mineral Wells of Harrogate. Proc. Yorks. Geol. and Polytech. Soc., N.S., vol. viii., Part III., p. 313.

General account of the geology of Harrogate, with particulars as to various borings.

W. CASH, etc. **Yorkshire.**

Report of the Committee, consisting of Professor W. C. Williamson, Mr. Thos. Hick, and Mr. W. Cash (Secretary), appointed for the purpose of investigating the Fossil Plants of Halifax. Rep. Brit. Assoc., Southport, 1883, p. 160.

Records the discovery of new forms of *Rachiopteris*, *Lepidodendron*, etc.

THOMAS T. CLARKE. **Yorkshire.**

The Yorkshire Caves: a Three Days' Trip with the Tyneside Field Club, September 14-16th, 1882. Nat. Hist. Trans. Northumb., Durham, and Newc., viii. 50-67 (1884).

Describes visits made to Weathercote, Jingle Pot and Hurtle Pot, Ingleborough Cave, Thornton Force and Yordas Cave, and the Victoria Cave.

H. W. CROSSKEY. **Yorkshire.**

List of Foraminifera and Ostracoda from the Shelly Patches in the Boulder-Clay at Bridlington.

An appendix to G. W. Lamplugh's paper [which see].

Eleventh Report of the Committee, consisting of . . [thirteen names], . . for the purpose of recording the position, height above the sea, lithological characters, size, and origin of the Erratic Blocks of England, Wales, and Ireland, reporting other matters of interest connected with the same, and taking measures for their preservation. Brit. Assoc. Rep. for 1883, Southport, pp. 136-146.

Detailed particulars are given of 43 Erratic Blocks found at Crosspool, near Sheffield, mostly derived from the North-West, from Borrowdale, North Lancashire, etc.

JAMES W. DAVIS. **Yorkshire.**

On a New Species of Cœlacanthus (C. Tingleyensis) from the Yorkshire Cannel Coal. Linnean Transactions, 2nd Series—Zoology, vol. 2, part 13, pp. 427-433 and plates xlvi-xlix.

The species of Cœlacanthus here described is from the Cannel Coal in the Middle Coal Measures at Tingley, in the West Riding of Yorkshire, and with it have been found a number of other fish-remains. The most important characters exhibited by this species consist in the method of attachment of the rays of the dorsal and caudal fins to the spinous processes of the vertebræ, in the larger number of the fin rays, and in their extremities being articulated; the ornamentation of the scales and exposed bones of the head consists partly of ridges and also of minute tubercles; and they also differ in the form of the scales.

JAMES W. DAVIS. **Yorkshire.**

On some Fossil Fish-Remains found in the Upper Beds of the Yoredale Series at Leyburn, in Yorkshire. Rep. Brit. Assoc., 1883, pp. 492-3.

The fish-remains occur in a red limestone at the top of the 'main limestone.' About forty species were found, mostly peculiar to the beds, but some genera are common to the Mountain Limestone and others to the Coal Measures.

On some Remains of Fossil Fishes from the Yoredale Series at Leyburn in Wensleydale. Quart. Journ. Geol. S., xl. 614-635, with plates xxvi., xxvii. Geol. Mag., February, pp. 91-92. Annals and Mag. Nat. Hist., February, p. 145. Abstract in Proc. Geol. Soc., December 19th, 1883.

An account of the fish-remains mentioned above, with descriptions of new species of *Gomphacanthus*, *Hemicladodus*, *Chromatodus*, *Sandalodus*, *Lophodus*, &c. (teeth and spines).

On the Occurrence of Remains of Labyrinthodonts in the Yoredale Rocks of Wensleydale. Rep. Brit. Assoc., Southport, 1883, p. 492.

Describes labyrinthodont remains, leg-bones, portion of skull, and cast of jaws, found in flag-rock quarried at Leyburn and the Shawl.

Report of the Committee, consisting of Professor A. H. Green, Professor L. C. Miall, Mr. John Brigg, and Mr. James W. Davis (Secretary), appointed to assist in the Exploration of Raygill Fissure, Yorkshire. Brit. Assoc. Rep., Southport, 1883, pp. 133-135.

The fissure occurs in an anticlinal of limestone in Lothersdale, near Skipton. The section shows (1) laminated clay, (2) sand and sandy clay, (3) brown sandy clay (numerous bones), (4) stiff yellow clay. Remains of Elephant, Hyæna, Hippopotamus, Rhinoceros, Bear, Roebuck, &c.

R. H. DAVIS. **Yorkshire.**

The Mineral Wealth of Harrogate. Proc. Yorks. Geol. and Polytech. Soc., N.S., vol. viii., Part III., p. 357.

Details as to the Harrogate Wells, with chemical analyses of the waters, and density at various depths.

W. BOYD DAWKINS. **Cumberland.**

On some Deposits of Apatite near Ottawa, Canada. Trans. Manch. Geol. Soc., 1884-5, xviii. 47-61.

Says (p. 55) this important mineral (crystalline phosphate of lime) occurs in Cumberland, at the foot of Brandygill, Carrock Fells.

ARTHUR W. DUNCAN. **Derbyshire.**

The Chemical Composition and Properties of the Carboniferous Limestone. [Very brief abstract only]. Rep. Manch. Sci. Stud. Assoc. for 1883, p. 50.

J. VINCENT ELSDEN. **Derbyshire, Northumberland, Durham.**

The Extinct Volcanoes of the British Isles. IV.—Newer Palæozoic (continued). Science Monthly, April, i. 170-171.

Refers to the 'toad-stones' of Derbyshire, and the Great and Little Whin Sills of Northumberland and Durham.

Professor EVERETT. **Northumberland, Lancashire.**

Sixteenth Report of the Committee, consisting of . . [18 names] . . appointed for the purpose of investigating the Rate of Increase of Underground Temperature downwards in various Localities of Dry Land and under Water. Rep. Brit. Assoc., Southport, 1883, pp. 45 et seq.

Observations made at North Seaton, a few miles from Newcastle, by Professor Lebour, and at Ashton Moss Colliery, Lancashire, by E. Garside.

WILLIAM FAWCETT.

Address on Fossil Plants from Various Formations. Proc. Geol. Ass., April, viii. 329-332.

Description of lantern illustrations of Carboniferous plants, &c.

O. FISHER. **Cumberland.**

On Faulting, Jointing, and Cleavage. Part III. Reversed Faults. Geol. Mag., June, pp. 266-276.

The observations are exemplified by reference to Cumberland slates.

WESTGARTH FORSTER. **Yorkshire, Northumberland, Durham, Westmoreland.**

A Treatise on a Section of the Strata from Newcastle-upon-Tyne to Cross Fell; 3rd ed., revised and corrected to the present time by the Rev. W. Nall, M.A., with memoir, 8vo., London 1883.

Chiefly details of stratigraphy: treats of the Coal Measures and the lead-bearing Mountain Limestone. List of lead mines in the north of England (Yorkshire, p. 156). Is reviewed in Nature, May 1, 1884, xxx. 3.

C. FOX-STRANGWAYS. **Yorkshire.**

Particulars of a well-boring at Irton, near Scarborough. Brit. Ass. Rep., Southport, 1883, p. 151.

Geol. Surv. Mem., Explanation of Quarter-sheet 93 N.E. The Geology of the Country north-east of York and south of Malton, 1884.

'Embraces a large part of the Vale of York, with a portion of the Jurassic and Cretaceous uplands to the east and north-east.' Treats of the Trias, Rhætic, Lias, Oolites, and Cretaceous rocks, and the Superficial Deposits of the district.

The Harrogate Wells, or the Mineral Waters of Harrogate geologically considered. Proc. Yorks. Geol. and Polytech. Soc., N.S., vol. viii., Part III., p. 319.

Physical and general geological account of West Yorkshire lying between the Pennines and Harrogate. Tables showing the principal constituents of the various groups into which the waters may be divided, and how one group differs from another.

J. S. GARDNER. **Yorkshire.**

British Cretaceous Nuculidæ. Quart. Journ. Geol. Soc., vol. xl. p. 120, with three plates. Abstract in Proc. Geol. Soc., Nov. 7th, 1883.

Gives description and classification of Cretaceous species of *Nucula* and *Leda*, including *N. planata*, *L. subrecurva*, and *L. seeleyi* from the Speeton Clay.

GEOLOGICAL SURVEY OF ENGLAND AND WALES.

Horizontal Sections, Sheet 131, 1884. **Yorkshire.**

Giving the coast of Yorkshire from Redcar to Upleatham, across the Ironstone measures.

JAMES HARDY. **Northumberland.**

Report of the meetings of the Berwickshire Naturalists' Club for the year 1883. Proc. B. Nat. Club, x. 279.

Geological notes made at Wooler and Cheviot.

W. HEMINGWAY. **Yorkshire.**

Fossil Flora of the Barnsley District (continued). Quart. Trans. Barnsley Nat. Soc., 1884, iv. 7-9 and plate.

Notes on *Lepidostrobus*, *Sporites*, *Trigonocarpum*, *Cardiocarpum*, *Lepidophyllum*, *Zeugopteris*, *Cyclopteris*, and an enumeration of the Ferns.

Geology [near Barnsley]. Quart. Trans. Barnsley Nat. Soc., 1884, iv. 6 and 16.

Notes on various coal-measure fossils observed, and of observations made at Mr. S. Seal's quarries at Darfield.

T. HICK and W. CASH. **Yorkshire.**

Contributions to the Fossil Flora of Halifax. Proc. Yorks. Geol. and Polytech. Soc., N.S., vol. viii., Part III., p. 370.

Notes on the structure and affinities of Calamites (with transverse section) and upon *Myriophylloides Williamsoni*.

RICHARD HOWSE. See under G. A. Lebour.

WILFRID H. HUDLESTON. **Yorkshire.**

Contributions to the Palæontology of the Yorkshire Oolites. No. 2, Gasteropoda of the Oxfordian and Lower Oolites. Geol. Mag., February, March, April, May, June, and July, pp. 49-63, 107-115, 145-154, 193-204, 241-252, 293-303, with plates iii., iv., vi., vii., viii., ix.

Continuation of papers in the Geol. Mag. for 1883. Describes numerous Yorkshire species of Gasteropoda, including *Phasianella*, *Cerithium*, *Nerinæa*, *Alaria*, *Turritella*, *Littorina*, *Amberleya*, *Onustus*, *Nerita*, *and Neritopsis*, etc. Copious references to the literature of the subject, synonyms, etc.

GEORGE PRINGLE HUGHES. **Northumberland.**

Address delivered to the Berwickshire Naturalists' Club, at Berwick, October 10th, 1883. Proc. Berw. Nat. Club, x. 227, and British Assoc. Report, Southport, 1883, p. 498.

Describes the geology of the Glendale Valley, North Northumberland. Horns of *Bos primigenius* and antlers of Red Deer found in a bog at Middleton Hall, south of Wooler. The author believes from this and similar deposits, that Glendale was once a lake.

J. GWYN JEFFREYS. **Yorkshire.**

List of shells obtained from the Basement-Clay at Bridlington Quay. Quart. Journ. Geol. Soc., vol. xl., p. 319, with a plate.

An appendix to G. W. Lamplugh's paper on 'Shelly Patches in the Boulder-Clay at Bridlington Quay.' A list of 83 species, many of which have not been previously recorded, while five are new species, belonging to the genera *Littorina*, *Rissoa*, *Pleurotoma*, *Utriculus*, and *Bulla*. Also a short appendix on the Cirripedia.

OSMOND W. JEFFS. **Lancashire, Cheshire.**

Local notes for Science Students; extracted from Rep. Liverpool Science Students' Assoc. 1883-4 (pp. 4).

A synopsis of the geological formations exposed within a short radius of Liverpool. The fact of the localities being named where typical sections may be readily examined is very valuable.

T. RUPERT JONES. **Northumberland.**

Notes on the late Mr. George Tate's specimens of Lower-Carboniferous Entomostraca from Berwickshire and Northumberland. Proc. Berw. Nat. Club, x. 313-326, and plate ii.

Enumerates the hand specimens, with their localities. Detailed description of eleven specimens of Entomostraca, with appendix. The Northumbrian species described and figured are:—*Bernix Tatei* (=*Beyrichia Tatei* Jones 1864); *Carbonia fabulina* J. and K., var.; *Leperditia Scotoburdigalensis* Hibbert; *L. subrecta* Portlock; *Beyrichia crinita* J. and K.; *Kirkbya spiralis* J. & K.; *Cytherella Tatei* sp. nov.; *Darwinella? Berniciana*, sp. nov.

T. RUPERT JONES, JAMES W. KIRKBY, and GEO. S. BRADY. **Cumberland, Durham, Derbyshire, Yorkshire, Northumberland.**

A monograph of the British Fossil Bivalved Entomostraca, from the Carboniferous Formation. Part I. The Cypridinadæ and their allies. No. 2 (conclusion), pp. 57-92 and plates. Palæontog. Soc., 1884.

Mention is made of species from East Cumberland, Durham, Derbyshire, Yorkshire, and Northumberland.

T. RUPERT JONES and H. WOODWARD. **Westmoreland.**

On some Palæozoic Phyllopoda. Geol. Mag., August, pp. 348-356.

Discinocaris, sp. nov., and *D.? gigas* H. Woodw., from the Coniston Mudstone (Upp. Silurian), Skelgill Beck, near Ambleside. *Aptychopris*, new species, collected by Mr. Marr in the Brathay (Lower Coniston) Flags at Troutbeck, Windermere. *Peltocaris*, new species from the Coniston Mudstone of Skelgill Beck. *Pinnocaris Lapworthi*, R. Eth., Jr., in an Upper Silurian bed near Kendal.

Naturalist,

A. J. JUKES-BROWNE. **Lincolnshire.**

On some Post-glacial Ravines in the Chalk-Wolds of Lincolnshire. [Geol. Soc., December 5th, 1883.] Geol. Mag., January, p. 45; and Science Gossip, April, pp. 93-94.

Describes Post-glacial deposits in Swaby Vale, the valleys near Louth, and near Caistor, stating too that these valleys are among the most remarkable instances of river erosion to be met with in England. Notes where the modern watercourses, after flowing for some distance along the line of an ancient (pre boulder-clay) valley, suddenly deserts that valley and passes through a ravine excavated entirely out of the chalk.

A. J. JUKES-BROWNE. **Yorkshire, &c.**

Student's Handbook of Physical Geology, 8vo, London, 1884.

Several references to Yorkshire, pp. 102, 125, 190, etc.

J. D. KENDALL. **Cumberland, Westmoreland, Lancashire.**

The Mineral Veins of the Lake District. Trans. Manch. Geol. Soc., 1883-4, xvii. 292-341 and several plates.

Description and analyses of the Borrowdale series; the Skiddaw slates; the Eskdale granite; the Ennerdale syenitic-granite; and the Carrock Fell hypersthenite. Mineral veins and their geological distribution, their direction and hade, length, breadth, and depth, and their inner nature. List of minerals found in the Lake district, with localities.

G. W. LAMPLUGH. **Yorkshire.**

On a Recent Exposure of the Shelly Patches in the Boulder-Clay at Bridlington. Quart. J. Geol. Soc., xl. 312-328, with woodcut; Geol. Mag., April, p. 185; and Ann. and Mag. Nat. Hist., April, p. 297. Abstract in Proc. Geol. Soc., February 20th, 1884.

Description of the 'Basement Boulder-Clay' thus exposed, with theory as to the origin of the shelly patches contained. Details of fossils discovered (number of Mollusca raised from 67 to 101, five of them being new). This paper is to prove that the shelly patches are not in place, but are remnants of beds which once existed on the spot, ploughed up and destroyed by the passage of ice over them, or else they have been far transported and here abandoned by the ice in its progress.

G. A. LEBOUR. **Northumberland.**

Notes on the Geology (for Medical purposes) of Tynemouth Union. Forming Appendix A (pp. 26, 27) to Dr. Barry's Report to the Local Government Board on the sanitary condition of the district, folio (Blue Book). London, 1884.

G. A. LEBOUR. **Durham.**

On the Breccia-gashes of the Durham Coast and some recent Earth-shakes at Sunderland. Proc. N. of Eng. Inst. of Mining and Mech. Engineers, vol. xxxiii. 1884, pp. 165-174, and plates xii., xiii.

This paper draws special attention to one of the strangest and most striking of the developments of the Magnesian Limestone, as displayed in Marsden Bay. The breccias are exposed on the cliff face between walls of ordinarily bedded Mag. Limestone, and present many peculiarities which are noted in detail, and their varieties also illustrated by diagrammatic sketches. Their origin and their connection with the recent earth-shakes at Sunderland are discussed at length.

G. A. LEBOUR. **Northumberland.**

On a Great Fault at Annstead, in North Northumberland. Proc. of N. of Eng. Inst. of Mining and Mech. Engineers, 1884.

This paper draws attention to and describes one of the most complete natural sections, and one of the greatest dislocations in Northumberland. The probable throw of the Annstead Fault is 980 feet. The beds described are Upper Bernician or Yoredale. A detailed section of the strata from Ebba's Snook to Annstead Burn given.

G. A. Lebour and Richard Howse. **Northumberland.**

A statement as to recent publications relating to Anodonta Jukesii (Lebour); and Reply to Prof. Lebour's statement (Howse). Nat. Hist. Trans. Northumb., Durham, and Newc., viii. 30-32 (1884).

Controversial matter, as to priority of publication of discovery of this shell in Northumberland.

[Rev. C. W. Markham.]

An ancient wooden [oak] way. Science Goss., June, p. 134. **Lincolnshire.**

Reports discovery near Brigg, in Lincolnshire, seven feet below the surface, of the above. Mr. Markham thinks it is of Neolithic age.

W. Mawer. **Lincolnshire.**

An interesting bit of Lincolnshire Geology. Sci. Goss., May, pp. 105-106, and woodcut.

Description of the Chalk ravine mentioned by Mr. Jukes-Browne in Science Gossip for May; this particular one is in the neighbourhood of Louth, and called Hubbard's Hills.

How the River Lud cut through Hubbard's Hills. Pamphlet, 1884.

This pamphlet gives an interesting popular account of the physical geography and geology of the Louth neighbourhood, illustrated by woodcuts.

J. Magens Mello. **Derbyshire.**

Note on a Specimen of Iron Amianthus. Proc. Geol. Soc., May 14th, p. 65. Geol. Mag., July, pp. 332, 333.

The specimen was found at the bottom of one of the Wingeworth Iron-furnaces, near Chesterfield.

A. T. Metcalfe, F.G.S. **Derbyshire.**

On the discovery in one of the bone-caves of Cresswell Crags of a portion of the upper jaw of Elephas primigenius. Nature, December 18th, 1884, xxxi. 163.

L. C. Miall. **Yorkshire.**

On a new Specimen of Megalichthys from the Yorkshire Coal-field. Quart. Journ. Geol. Soc., August 1st, xl. 347-352, and six woodcuts; Geol. Mag., May, pp. 237, 238; Annals and Mag. Nat. Hist, June, p. 483; and Abstract in Proc. Geol. Soc., April 2nd, 1884.

Description of an unusually complete specimen of *Megalichthys Hibberti*, found in the roof of the Halifax Hard Bed at Idle. It is externally in good preservation, and but little disturbed; the ventral surface is uppermost, and the pectoral, ventral, anal, and caudal fins can be more or less satisfactorily made out; the dorsal surface is absent.

Hugh Miller.

On Fluxion-Structure in Till. Geol. Mag., October, New Series, Decade III., vol. i., pp. 472, 473.

A rough structure comparable to the fluxion-structure of igneous rock, the smaller boulders diverging around and apparently drifting past the larger, indicates that at least a surface layer of the Till was dragged along, with a shearing movement of particle upon particle, producing intimate glaciation within its mass.

Hugh Miller. **Northumberland.**

The 'Encyclopædia Britannica.' Ninth Edition, vol. xvii. *Mot-Orm* (Edinburgh, 1884).

Under the letter N is a slight general sketch of the physical geography and geology of Northumberland, by Hugh Miller of H.M. Geological Survey. The views of the late George Tate as to the divisions of the Carboniferous Series are well described; later work, both by the author himself and by others, being practically ignored.

J. R. MORTIMER. **Yorkshire.**

A description of the origin and distribution of the un-water-worn Chalk-gravel of the Yorkshire Chalk Hills, supplemented by an account of neighbouring and somewhat contemporaneous deposits. Proc. Geol. Assoc., January, viii. 287-298.

Stratigraphical positions of this gravel; what the gravel contains, and the origin of the deposits.

G. H. MORTON. **Lancashire.**

Section across the Trias recently exposed by a Railway Excavation in Liverpool. Proc. Liverp. Geol. Soc., 1883-84, iv. 427-434, and plate; and Rep. Brit. Assoc., Southport, 1883, p. 489.

The section shows that while faults are numerous in the Keuper Sandstone, which was frequently fractured during subsidence into a depression, the Pebble-beds of the Bunter are very little faulted.

E. T. NEWTON. **Yorkshire.**

List of Fish-Remains from Shelly Patches in the Boulder-Clay at Bridlington Quay. Quart. Journ. Geol. Soc., vol. xl., p. 322.

An appendix to G. W. Lamplugh's paper.

A. M. NORMAN. **Northumberland, Cumberland, Durham.**

Address to the . . Tyneside Naturalists' Field Club . . May 27th, 1881. Nat. Hist. Trans. Northumb., Durham, and Newc., viii. 68-71, 83-89 (1884).

Notes of observations at field meetings; Corbridge-on-Tyne; Alston, Cumberland; St. John's, Weardale, Co. Durham; Barrasford and Chollerton, North Tyne; and Marsden Rocks, Co. Durham; and obituary notice of Thomas Atthey.

G. OLIVER. **Yorkshire.**

The Mineral Springs of the Grand Anticlinal of the West Riding. Proc. Yorks. Geol. and Polytech. Soc., N.S., vol. viii., Part 3, p. 336.

A brief account of the geology of that portion of the West Riding which extends some 30 or 40 miles west of Harrogate; also the data pertaining to the issues of mineral waters in the district. Theories also advanced as to the derivation of the various salts found in these waters.

SEPTIMUS OSWALD. **Yorkshire.**

On a Perched Block of Sandstone in Lunesdale. Nat. Hist. Trans., Northumb., Durham, and Newc., viii. 181-184.

This block on the N. side of the road from Middleton to Brough, by way of the bridge, called that of the 'Grains of the Beck.' It stands on a pedestal of limestone, but no details as to the lithology of the block are given.

OVENDEN NATURALISTS' SOCIETY. **Yorkshire.**

[Reports of Meetings.] Nat., January, ix. 107-108.

SIR RICHARD OWEN. **Derbyshire.**

Notes on the Remains of Elephas primigenius, from the Cresswell bone-cave. Nature, December 18th, xxxi. 163.

C. PARKIN. **Yorkshire.**

The Mineral Resources of the Rosedale Abbey District. North of England Institute of Mining and Mechanical Engineers: Trans., vol. xxxii. p. 43, Newcastle-upon-Tyne.

JOHANNES PETERSEN. **Northumberland.**

Mikroskopische und Chemische Untersuchungen am Enstatitporphyrit aus den Cheviot Hills. Inaugural-Dissertation, zur Erlangungen der Doctor würde der philosophischen Fakultät zu Kiel. Kiel, 1884, 8vo, 44 pages.

A long and detailed petrological description and chemical analysis of specimens collected by Dr. Trechmann in the Cheviot district, from the localities of Allerhope Burn, Carhope on the Coquet, Windy Haugh, Shellmoor Farm, &c. This communication, coming as it does from one of the first petrological laboratories in the world, contains work of the very highest order.

J. ARTHUR PHILLIPS. **Northern Counties generally.**

A Treatise on Ore Deposits. 8vo, 651 pp., London, 1884.

Much information respecting the useful minerals of the North of England occurs in this work under the following heads: Iron Ores of the Carboniferous Limestone—Northern Counties, pp. 158-164; Ironstones of the Coal-Measures, pp. 165-169; Lead Mines of the Carboniferous Limestone, pp. 180-195.

C. E. DE RANCE. **Lancashire and Yorkshire.**

Ninth Rep. of the Committee, consisting of [19 names] appointed for the purpose of investigating the Circulation of Underground Waters in the Permeable Formations of England, and the Quantity and Character of the Water supplied to various Towns and Districts from these Formations. Brit. Assoc. Rep., Southport, 1883, pp. 147-159.

Description of boring at Hall Wood, about 6 miles E. of Liverpool, 414 feet in depth (p. 150); full description of strata met with in boring 439 feet 6 in., Irton, near Scarborough (C. Fox-Strangways), with results obtained (p. 151).

C. E. DE RANCE. **Lake District, Lancashire, Cheshire.**

Notes on Geological Sections within forty miles radius of Southport [brief abstract]. Rep. Brit. Assoc., Southport, 1883, p. 489.

The Silurians of the Lake District and North Wales within the radius are described, also those in the Carboniferous Limestone, Coal Measures, Permian and Triassic rocks, especially the Keuper Sandstones and Marls round Southport.

C. E. DE RANCE and others. **Lake District.**

Discussion on Mr. Kendall's Paper on Mineral Veins of the Lake District. Trans. Manch. Geol. Soc., 1884-85, xviii. 38-43.

The bedding, cleavage, and jointing of the rocks of the Lake District reviewed.

C. E. DE RANCE. **Yorkshire, Durham, Lancashire, Cheshire, Lincolnshire.**

On the occurrence of Brine in the Coal-Measures, with some remarks on Filtration. Trans. Manch. Geol. Soc., 1884-85, xviii. 61-81.

Localities in the Coal-Measures of Yorkshire, at Woolley Edge Rock, E. of Wakefield; of Durham, near Butterby, Walker, Wallsend Collieries, &c.; of Lancashire, at Charnock Richard, W. of Chorley and Worthington Colliery, near Standish; and of Cheshire, at Astley Deep Pit, near Dukinfield. In the New Red Sandstone, Lincolnshire, a boring described 1,140 feet in depth, W. of Horncastle; in the Keuper Marls, Cheshire, analyses, showing the composition of rock salt, which dissolved forms the Cheshire brine.

T. MELLARD READE. **Lancashire.**

A Delta in Miniature—twenty-seven years' work. Quart. Journ. Geol. Soc., xl. 263-266, with woodcuts; and Geol. Mag., March, p. 143.

Description of miniature delta, in Rake Reservoir supplying Liverpool.

Miniature Domes in sand. Geol. Mag., January, New Series, Decade III., vol. i., pp. 21-22 (woodcuts).

Observations on shore, at Blundell Sands, of numerous small sand bosses, from ½ in. to 3 in. in diameter. From these propounds theory of formation of laccolites, or stone cisterns mentioned in Gilbert's Geol. of Rocky Mountains.

On a Section of Keuper Marls, at Great Crosby. Geol. Mag., October, New Series, Decade III., vol. i., 445-447.

Description of Section at Great Crosby, showing 8 to 15 feet of Boulder-Clay, overlying argillaceous shales belonging to the Keuper Marls.

Further notes on Rock-fragments from the South of Scotland, embedded in the Low-level Boulder-Clay of Lancashire. Quart. Journ. Geol. Soc., xl. 270-272; Geol. Mag., April, pp. 186-187.

A continuation of Paper in Quart. Journ. Geol. Soc., vol. xxxix, p. 119.

Naturalist,

T. Mellard Reade. **Cheshire.**

Ripple-marks in Drift in Shropshire and Cheshire. Quart. Journ. Geol. Soc., xl. 267-269, with woodcuts; Geol. Mag., April, p. 187.

Gives section at Tranmere, Cheshire, but discussion tended to prove that these were not true ripple-marks, but due to pressure.

T. Mellard Reade. **Lancashire.**

Experiments on the Circulation of Water in Sandstone. Proc. Liverp. Geol. Soc., 1883-84, iv. 434-447, and woodcuts.

These experiments show that a very great deal of water may be drawn laterally from rivers flowing over sandstone, and bringing water from other sources, which may serve to explain the prodigious quantity of water which can be, and is drawn artificially from the New Red Sandstone.

Clement Reid. **Yorkshire.**

Dust and Soils. Geol. Mag., April., pp. 165-169.

Refers to the Chalk Wolds, and to the North Yorkshire Moors, whereon bare patches of shales were finely disintegrated by frost, and blown away in small clouds of dust.

Charles Ricketts. **Lancashire.**

On Indented Pebbles in the Bunter Sandstone, near Prescot. Proc. Liverp. Geol. Soc., 1883-4, iv. 447-449.

Wherever these pebbles are in contact an indent is made to a greater or less extent in the hard quartzite, forming smooth and regular hollows. Sir A. Ramsay gives what appears to be a correct explanation of this.

H. G. Seeley. **Northern Counties generally.**

Phillips' Manual of Geology, Part I. 8vo, London, 1884.

Contains many references to Yorkshire and the other Northern counties; the Whin Sill (p. 336), the Cleveland and Armathwaite Dyke (338), lead ores (411,423), the Cleveland ironstone (432).

J. Shipman. **Isle of Man.**

Ice-grooved Boulders. Midl. Nat., January, vii. 25.

Referring to a previous paper by Mr. Harrison, the writer gives his observations on ice-grooves running parallel with the coast-line near Port St. Mary, Isle of Man, the peculiarity in this case being that the striæ passed round the corners of the boulders.

James Shipman. **Notts.**

Geology of the Parish of Lenton (part of the borough of Nottingham). Reprint from Godfrey's 'History of the Parish and Priory of Lenton.' 1884. 53 pages and geol. section.

A comprehensive and detailed account of the strata in the parish of Lenton (part of the borough of Nottingham). Good sections given of the country from the Tottle Brook to the south side of Nottingham Park, and from Wollaton Hall across the Trent Valley to Clifton Grove. Fine examples of trough faults shown. General account of the geology, with detailed chapters on Alluvial Deposits, Upper Keuper Marl, Lower Keuper 'Waterstones,' Lower Keuper Basement Beds, Bunter Pebble Beds, Lower Mottled Sandstone, Coal Measures.

Theodore Sington. **Derbyshire, Lancashire, Cheshire.**

Organic Remains of the Carboniferous Limestone. [Brief abstract only.] Rep. Manch. Sci. Stud. Assoc. for 1883, p. 49-50.

George Varty Smith. **Cumberland.**

Preliminary Note on the further discovery of Vertebrate Footprints in the Penrith Sandstone. Rep. Brit. Assoc., Southport, 1883, pp. 510-511, and woodcut.

GEORGE VARTY SMITH. **Cumberland.**

On Further Discoveries of Footprints of Vertebrate Animals in the Lower New Red Sandstone of Penrith. Quart. Journ. Geol. Soc., August, xl. 479-481, and woodcut; Geol. Mag., July, p. 336.

These valuable as coming from undoubtedly Lower Permian strata, in which remains of vertebrate forms higher than fishes had so rarely occurred.

H. B. STOCKS. **Yorkshire.**

On the Composition of the Coal Balls and Baum Pots in the Lower Coal Measures. Proc. Yorks. Geol. and Polytech. Soc., N.S., vol. viii., Part III., p. 393.

Explanation of the terms 'Coal Ball' and 'Baum Pot,' with analyses of specimens of the same obtained from Bradshaw, Stocks' Pit, and Swan Bank, near Halifax.

J. J. HARRIS TEALL. **Cumberland.**

A Faulted Slate. Geol. Mag., January, New Series, Decade III., vol. i., pp. 1-3, and plate i.

The photograph represents a piece of faulted slate from the Borrowdale series in the English Lake district, and exhibits every detail of the faulting in a perfect manner. Examples of a number of typical trough faults most beautifully shown, and explanations of same given in detail.

J. J. HARRIS TEALL. **Northumberland.**

Dr. J. Petersen on some Cheviot Rocks. Geol. Mag., May, New Series, Decade III., vol. i., pp. 226-234.

Petrology of a rock named as enstatite-porphyrite by Dr. Petersen, the term 'enstatite' being selected as the representative of the entire group of rhombic pyroxenes, and the term porphyrite being given to the rock because it is of Pre-Tertiary age.

J. J. HARRIS TEALL. **Northumberland, Durham, Yorkshire.**

Petrological Notes on some North of England Dykes. Quart. Journ. Geol. Soc., xl. 209-247, plates xii., xiii.; Geol. Mag., February, New Series, Decade III., vol. i., p. 92; and abstract in Proc. Geol. Soc., December 19th, 1883.

Full petrological details, with microscopical and chemical analyses, are given respecting the following North-country Dykes:—The Cleveland, Cockfield, and Armathwaite Dyke; the Hett and related dykes, the Hebburn Dyke (which Mr. Teall regards as distinct from that of Coley Hill), the Tynemouth Dyke (which he thinks identical with the Coley Hill Dyke), the Brunton Dyke, the Seaton and Hartley Dykes, the Morpeth Dyke, the High Green Dykes, the Acklington Dyke.

The great Cleveland Dyke is traced to Armathwaite in the Eden Valley; it is an augite-andesite, probably of Miocene age; it has no connection with the Whin Sill. The Bibliography of the subject is given.

J. J. HARRIS TEALL. **Northumberland, Durham.**

On the Chemical and Microscopical Characters of the Whin Sill. Quart. Journ. Geol. Soc., vol. xl., pp. 640-657, plate xxix.; Geol. Mag., August, New Series, Decade III., vol. i., pp. 380, 381.

A detailed paper, giving very fully the petrological characters of the Great Whin Sill, from original observation both in the field and in the laboratory. The absence of olivine in the rock is one of its most striking peculiarities, and it is shown to be rather a diabase, like some known in Sweden and in the Atlantic States of North America, than a true basalt. The author regards the intrusive nature of the Whin Sill as no longer requiring proof.

The felspar of this well-known rock is shown to give an analysis agreeing with that of andesine; the dominant pyroxene is monoclinic, but with the composition of enstatite; the other chief constituent seems to be an intergrowth of magnetite and ilmenite. The Bibliography of the subject is given.

JOHN HENRY TIFFEN. **Yorkshire.**

Prize Essay on the Agriculture of East and North Ridings of Yorkshire. North British Agriculturist, October 29th, xxxvi. 733-738.

Gives stratigraphical description and character of soils in East Riding—(1) Holderness, (2) The Wolds, (3) Howdenshire; North Riding—(1) The Carboniferous, (2) The New Red Sandstone, (3) The Oolite.

C. O. TRECHMANN. **Westmoreland.**

Analysis of an altered Siderite from Hilton Beacon Lead Mine, near Appleby. Mineralogical Mag., July, vi. 52-53.

Analysis made to determine the nature of the alteration which had changed the light-greenish or brownish yellow siderite to the dark, almost perfectly black, glossy crystals so often seen.

G. R. VINE. **Derbyshire.**

Fourth Report of the Committee, consisting of Dr. H. C. Sorby and Mr. G. R. Vine, appointed for the purpose of reporting on Fossil Polyzoa. Rep. Brit. Assoc., Southport, 1883, pp. 161-209.

At p. 191 is a reference to *Ptilopora Phillipsii* Vine, from Castleton, Derbyshire (Carboniferous Limestone).

G. R. VINE.

Fifth and Last Report of the Committee, consisting of Dr. H. C. Sorby, F.R.S., and Mr. G. R. Vine, appointed for the purpose of reporting on Fossil Polyzoa. Brit. Assoc. Rep., Montreal, 1884. Reprint (proof), pp. 123.

One object of this report is to furnish the student with as full a list of synonyms, both of genera and species, as possible. The classification adopted is that formulated by the Rev. T. Hincks for his work on British Marine Polyzoa.

G. R. VINE. **Yorkshire.**

Further Notes on New Species and other Yorkshire Carboniferous Fossil Polyzoa described by Prof. John Phillips. Proc. Yorks. Geol. and Polytech. Soc., vol. viii., Part III., p. 377.

ALBERT H. WATERS. **Yorkshire.**

The Red Chalk and its Fossils (concluded). Nat. World, August and September, i. 128-130, 147-149, and woodcuts.

Short stratigraphical account of the Red Chalk, with its localities and fossils.

R. LLOYD WHITELEY. **Yorkshire.**

Analysis of the Kissingen Saline Chalybeate Water, 1883, as compared with analyses in 1845, 1854, 1867, and 1879. Proc. Yorks. Geol. and Polyt. Soc., vol. viii., Part III., p. 366-370.

These analyses are intended to throw a little more light on the character and composition of the well-known Kissingen Spring at Harrogate.

GEORGE WILD.

Sigillaria ('Pot-Holes') and their Detection in the Roof of a Coal Seam by their stigmarian roots. Trans. Manch. Geol. Soc., 1883-84, xvii. 215-224, and three plates.

The practical value of this paper is very great. Diagrams showing the characteristic features of the roots and articulation of the rootlets externally, also the vegetable structure internally; also a section of the seam of coal (Peacock Mine) showing the stratification of roof and floor, and position in which the sigillarian trunks are found.

E. LEADER WILLIAMS and —. HUNTER. **Lancashire, Cheshire.**

A Geological Section of the Mersey and Irwell Valleys. Trans. Manch. Geol. Soc., 1883-4, xvii. 212-215.

This section, a sample of the undulatory land surface carved in the solid rock which exists beneath the superficial deposits of clay, sands and gravels of boulder-clay origin, and of a Pre-Glacial remote origin.

W. C. WILLIAMSON. **Lancashire and Yorkshire.**

On some supposed Fossil Algæ from Carboniferous Rocks. Brit. Assoc. Rep., Southport, 1883, p. 493.

The specimens come from Yoredale rocks, on the banks of the Hodder, and, like the similar fossils from the Cambrian which have been called Chrossochorda, are probably casts of the tracks of Crustacea or other animals.

W. C. WILLIAMSON. **Yorkshire.**

Biographical notices of eminent Yorkshire Geologists: III. 'John Williamson.' Proc. Yorks. Geol. and Polyt. Soc., vol. viii., pp. 296, 313.

A graphic account of the life and work of John Williamson, the Scarborough geologist.

W. C. WILLIAMSON. **Lancashire, Yorkshire.**

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Yorkshire, Northumberland, Derbyshire, and Cumberland species are referred to and described.

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[Excursions.] Reported in the Naturalist. Sherburn, vol. ix., p. 219.

Naturalist,

CLASSIFIED INDEX.

CONTRIBUTORS.

Adamson, C. M., 8.
Archer, H. T., 58, 145, 387.
Armistead, J. J., 293.

Backhouse, James, F.G.S., 10.
Backhouse, J., jun., M.B.O.U., 32, 58, 149, [353.
Bailey, Matthew, 257, 364.
Baker, J. Gilbert, F.R.S., 86.
Barber, Wm., 111.
Birks, Thomas, 386.
Bolam, George, 9.
Brady, W. E., 34, 104, 206.
Bunker, Thomas, 9, 60, 87.
Butterfield, E. P. P., 42, 58, 292.

Cambridge, Rev. O. P., M.A., F.L.S., 103.
Carter, J. W., 57, 104, 347.
Carter, Thomas, 58, 91, 269.
Chadwick, J. M., 251.
Chadwick, S., 126, 258.
Chaloner, Rev. J., 149, 299.
Chapman, Abel, M.B.O.U., 150. [385, 387.
Clarke, W. E., F.L.S., M.B.O.U., 19, 32, 247,
Cockerell, T. D. A., M.C.S., 181, 321.
Cole, Rev. E. Maule, M.A., 34.
Collier, Edward, M.C.S., 181.
Cordeaux, John, M.B.O.U., 1, 33, 105, 267.

Darbishire, R. D., B.A., F.G.S., 60, 320.
Dennis, Thomas, 21.
Dobrée, N. F., 103, 378.
Druce, G. C., F.L.S., 35, 85.

Ellis, J. W., L.R.C.P., 45, 163, 237, 322.
Embleton, Dennis, M.D., 128.
Emmet, John, F.L.S., 270, 299.

Fish, C. F., B.A., 93.
Fowler, Rev. W. W., M.A., F.L.S., 32.
Fox, Rev. H. E., M.A., M.B.O.U., 111, 139.

Gain, W., 20, 21, 31, 112, 138, 321.
Gallwey, Sir R. P., Bt., M.B.O.U., 364.
Gardner, J., 292.
Goss, Herbert, F.L.S., 111, 206.
Grove, Ed., F.R.M.S., 232. [344.
Gurney, J. H., jun., F.Z.S., M.B.O.U., 110,

Hall, A. E., 292.
Hanson, C. C., 127.
Harker, Alfred, M.A., F.G.S., 229.
Hey, Rev. W. C., M.A., 25, 129, 258.
Hick, T., B.A., B.SC., 157, 175, 203, 275.
Hobkirk, C. P., F.L.S., 21, 259, 320.
Hodgkinson, J. B., 246, 259.
Hodgson, W., A.L.S., 278, 299.
Hopkin, J., 228.
Howgate, Edward, 366.
Hudson, Baker, M.C.S., 112.

Ingleby, James, 202, 299.

Jeffcott, J. M., M.H.K., 14.
Jeffs, O. W., 212.

Kane, W. F. de V., M.A., M.R.I.A., 73, 161.
Kew, H. Wallis, 174, 201, 320, 393.

Lawton, P. W., 110.
Lebour, Prof. G. A., M.A., F.G.S., 16, 179.
Lee, P. Fox, 13, 36, 342.
Lees, F. A., M.R.C.S., 21, 134, 228, 259,
Limpricht, Gustav, 113. [306, 341.

Maclagan, Dr. T. W., 178. [149, 299.
Macpherson, Rev. H. A., M.A., 32, 125, 148,
Massee, G., F.R.M.S., 140, 300, 378.
Miall, Prof. L. C., F.L.S., F.G.S., 121.
Middleton, R. M., jun., F.L.S., 228.
Musson, C. T., M.C.S., 112, 181, 326.

Nelson, William, M.C.S., 20.
Nicholson, Francis, F.Z.S., 182.

Oldfield, G. W., M.A., F.L.S., F.E.S., 88, 202.
Oldham, Charles, 149, 156, 274.

Paterson, A., 58. [284, 312, 330, 352, 384.
Paul, G., F.G.S., F.R.M.S., 183, 216, 236, 264,
Peacock, Rev. Adrian, 148.
Pearson, W. H., 113.
Percival, John, 32.
Pickard, Edgar, 227. [269, 292, 344, 347.
Porritt, G. T., F.L.S., F.E.S., 15, 42, 57, 104,
Postlethwaite, T. N., B.A., 127, 128.
Price, A. W., 202.
Prodham, Herbert, 213.

Raine, Thomas, 298.
Rawson, F. G. S., 201.
Roberts, Geo., M.C.S., 321, 389.
Robson, J. E., 393. [320, 366.
Roebuck, W. D., F.L S., 20, 202, 246, 258,

Shepheard, T., F.R.M.S., 262, 309.
Slater, Rev. H. H., M.A., F.Z.S., 89, 91.
Slater, Matthew B., 36.
Smethurst, Charles, 246.
Soppitt, H. T., 178. [385, 393.
Southwell, Thomas, F.Z.S., 88, 217, 228,
Standen, Robert, 128.
Stephenson, Thomas, 180, 201, 269.
Stolterfoth, Henry, M.D., 66.
Storey, William, 32, 88, 127, 149, 201, 202,
Stuart, J. A. E., L.R.C.P., 345. [228, 298, 299.
Summerfield, Rev. R. A., 228.
Taylor, J. W., M.C.S., 139.
Vine, G. R., 37, 61, 97, 207, 313, 340, 367.
Walker, A. W., 127.
Walsingham, Lord, M.A., F.L.S., 19.
Watkins, Rev. M. G., M.A., 59.
West, William, M.C.S., 178, 232.
Whitaker, Joseph, F.Z.S., 19, 58, 127, 149,
Whitwell, William, 86. [201, 336.
Wilson, Thomas, 115, 174, 246.
Wrigglesworth, E. B., 127, 206.

BOOK NOTICES.

Baker.—Flora of English Lakes, 233. [328.
Bell.—Comparative Anat. and Physiology,
Bottone.—The Dynamo, 95. [282.
Braithwaite.—Salmonidæ of Westmoreland,
Calvert.—Natural History of Durham, 263.
Cooke.—British Freshwater Algæ, 235.
Davis.—Fossil Carboniferous Fish, 184.
Day.—British and Irish Fishes, 215.
Druce.—Oxfordshire Flora, 183.
[Fish].—Handbook of Natural History, 119.
Forbes.—Eastern Archipelago, 281.
Friend.—Ministry of Flowers, 282.
Grieve.—The Great Auk, 350.
Grove.—Synopsis of Bacteria, &c., 94.
Gurney.—Diurnal Birds of Prey, 22.
Harris.—The Honey Bee, 94.
Hobkirk.—Synopsis of British Mosses, 160.
Hooker.—Students' Flora, Ed. III., 67.
Hudson and Gosse.—Rotifers, 329.
Ibbetson.—Ferns of York, 22.
Lang.—List of European Butterflies, 182.
Mitchell.—Birds of Lancashire, 310.
Mosley.—Natural History Teacher, 215.
Newton.—Ornithology (ex Enc. Brit.), 233.
Newton and Saunders.—Yarrell's Birds, 311.
Pascoe.—List of British Vertebrata, 182.
Report on Bird-migration in 1883, 43.
Report on Bird-migration in 1884, 382.
Roberts.—Nat. History of Lofthouse, 382.
Sonnenschein & Co.—Penny Handbks., 95.
Spruce.—Hepaticæ Amazinæ et Andinæ, 71.
South.—List of British Lepidoptera, 117.
Southwell.—List of Norfolk Mammals, 124.
Wallace.—Flowers, a Fantasy, 95.
Wood.—Season among the Flowers, 95.

CHESHIRE.

Birds: Bibliography, 185, 223; Reed Warbler breeding at Pick-mere, 149, 182; Migrant arrivals, 249.
Coleoptera: Liverpool List, 45, 237, 322.
Crustacea: Pasiphæa sivado in the Dee, 93.
Flowering Plants: Bibliography, 331.
Fungi: Bibliography, 337.
Geology: Bibliography, 394; a buried valley, 212.
Lepidoptera: Bibliography, 286; A. O. Walker's new list, 24; Heliothis peltigera, 42, 347; Lepidopterous Fauna of Lancashire and Cheshire, 163, 183, 206.
Mammalia: Bibliography, 156.
Mollusca: Freshwater Shells, Baguley, 156.
Mosses: Bibliography, 338.
Polyzoa, &c.: Paludicella ehrenbergi, 262; Spongilla, &c., at Eaton, 309.
Societies: Chester, 24, 142, 328; Macclesfield, 329; Stockport, 235.

CUMBERLAND.

Birds: Bibliography, 185, 223; Hawfinch, 32, 149; Garganey, 32; Robin in Salt Creeks, 148; Whimbrel, 149; Arrivals of Migrants in 1885, 247; List of Solway Birds, 293; Wild Fowl, 299; Curlews in Solway, 299; Avifauna of Upper Teesdale, 353; Macpherson and Duckworth's new list, 383.
Ferns: Asplenium lanceolatum, 36; Varieties, 259.
Fishes: Bibliography, 253.
Flowering Plants: Bibliography, 332; Melampyrum pratense, var. nov. hians, 35; Flora of Lake District, 86, 96, 234; Andreæa commutata, species new to science, 113; Vicia sylvatica, 278.
Fungi: Bibliography, 338.
Geology: Bibliography, 394.
Lepidoptera: Bibliography, 285.
Lichens: Bibliography, 338.
Mammalia: Bibliography, 152; Deep drop for a Weasel, 128; Otter-hounds, 329.
Mosses and Hepatics: Bibliography, 339.
Societies: Cumberland Association, 263.

DERBYSHIRE.

Birds: Bibliography, 185, 223.
Cryptogamic Bibliography, 337.
Fishes: Bibliography, 253.
Flowering Plants: Bibliography, 331.
Geology: Bibliography, 394.
Lichens: Solorina saccata, 338.
Lepidoptera: Bibliography, 285.
Mammalia: Bibliography, 156.
Mollusks: Achatina, 274.
Mosses and Hepatics: 21, 259; Bibliography, 338.
Palæontology: 371.

DURHAM.

Birds: Bibliography, 188, 223; Hawfinch breeding, Winlaton, 19; Avifauna of Upper Teesdale, 353.
Cryptogamic Bibliography, 339.
Fishes: Bibliography, 254.
Flowering Plants: Bibliography, 333; Teesdale Botany, 10; Cypripedium calceolus, 235.
Geology: An abnormal deposit of drift coal in N. Durham, 179,213; Bibliography, 394.
Lepidoptera: Bibliography, 285; Chærocampa nerii, Hartlepool, 292; Heliothis peltigera, Hartlepool, 393.
Mammalia: Bibliography, 153; Seal, Tees mouth, 43; Black Rat, Newcastle, 88, 128; Noctule near Cleadon, 202; Black Rat, Hartlepool, 228.
Mollusca: Slugs, 20; Shells, 112.
Reptiles, &c.: Bibliography, 252.

LANCASHIRE.

Birds: Bibliography, 185, 223; Woodcock, Windermere, 58; Reed Warbler near Wigan, 182; Arrivals of Migrants in 1885, 247; Night-jar, Eccles, 251; Birds of Lancashire reviewed, 310.
Coleoptera: Liverpool List, 45, 237, 322.
Desmids: Bibliography, 337.
Fishes: Bibliography, 253.
Flowering Plants: Bibliography, 331; Flora of Lake District, 86, 96, 235.
Fungi: Bibliography, 339.
Geology: A Buried Valley, 212; Micropalæontology, 371; Bibliography, 394.
Lepidoptera: Bibliography, 285; Windermere, 42; Lepidopterous Fauna of Lancashire and Cheshire, 163, 183, 206; Lycæna corydon, 246; Heliothis peltigera, 347.
Mammalia: Bibliography, 153; Badgers near Preston, 128; Rats eating Freshwater Shells, 274.
Mollusca: Freshwater Shells eaten by Rats, 274; Hardy's Manchester List, 351.
Mosses: 21, 259.
Reptiles, &c.: Bibliography, 252; Sand Lizard at Southport, 258.
Societies: Liverpool, 43, 95, 142, 184, 215, 311, 329; Manchester, 21, 36, 96, 114, 183, 184, 215, 235, 259, 328, 351.

LINCOLNSHIRE.

Birds: Bibliography, 185, 223; Thick-knee and Temminck's Stint, Gainsborough and Lincoln, 32; Kite near Wragby, 34; Cuckoo laying in a Pollard Willow, 127; Little Auk near Boston, 127; Missel Thrush near Louth, 201; Migrant arrivals in 1885, 248; Spring Notes for 1885, 267; Little Auk occurring in July, 344.
Fishes: Bibliography, 253; of Grimsby about 1300, 60.
Flowering Plants: Bibliography, 332; Rosa tomentosa, 21; Elder growing upon a Willow, 320.
Fungi: Bibliography, 339; Æcidium pimpinellæ v. apii, 21.
Geology: Bibliography, 394.
Lepidoptera: Bibliography, 285; Satyrus tithonus, 104, 174.
Mammalia: Bibliography, 153; Wild Cat and other species near Wragby, 33; Exportation of Stoats and Weasels to New Zealand, 143; Sperm Whale at Grimsby in 1563, 228; Otter, Louth, 393.
Mollusca: Marine Shells at Mablethorpe, 31; Amalia gagates at Alford, 366.
Natural History of Lincolnshire, 265.
Societies: Alford, 311; Louth, 142, 383.

ISLE OF MAN.

Birds: Bibliography, 226; Manx traditions, 14; Arrival of migrants, 247.
Geology: Bibliography, 403.
Lepidoptera: Bibliography, 285.
Mammalia: Bat, Dormouse, and Hedgehog in Manx tradition, 14.
Mollusca: Snail in Manx tradition, 14.
Mosses, 21.
Tradition: The Seven Sleepers, 14.

NORTHUMBERLAND.

Algæ: Bibliography, 337.
Birds: Bibliography, 185, 223; Red-breasted Flycatcher, 9; Hawfinch nesting, 19; early appearance of Snow-bunting, 58; Peregrine, Cheviot, 58; Winter visit to the Farnes, 89; Close Time for Wild Birds, 95; Notes for Upper Coquetdale, 105, 150; Destruction of bird-life at the Farnes, 111; Spotted Eagle in Northumberland, 387.
Fishes: Bibliography, 253; Bull Trout of Coquet and Tweed, 59, 345.
Flowering Plants: Bibliography, 332; Additions to Northumberland Flora, 139; Corallorhiza innata, 178; Botany of Eastern Borders, 342.
Fungi: Bibliography, 337.
Geology and Palæontology: Micro-palæontology of the Northern Carboniferous Shales, 37, 61, 97, 207, 313, 367; Bibliography, 394.
Lichens: Bibliography, 338.
Lepidoptera: Bibliography, 285.
Mammalia: Bibliography, 152; Black Rat at Newcastle, 88, 128; Squirrel attacked by a bird, 202.
Mollusca: Riding Mill-on-Tyne, 139.
Reptiles, &c.: Bibliography, 252.
Societies: Tyneside Club, 282.

NOTTINGHAMSHIRE.

Birds: Bibliography, 185, 224: Great Tit and Bees, 19; Spring Birds at Mansfield, 19; Tufted Duck at Rainworth, 58; Puffin at Mansfield, 127; Woodcocks in Notts., 149; Rainworth Notes, 201; Grey-lag Goose at Papplewick, 201; Arrivals of Migrants in 1885, 247.
Fishes: Bibliography, 254.
Flowering Plants: Bibliography, 333; Rosa tomentosa, 21; Luminous Wood, 326.
Fungi: Hydnum coralloides at Ossington, 138, 339.
Geology: Geological map of Nottingham, 142; Bibliography, 394.
Lepidoptera: Bibliography, 287.
Mammalia: Bibliography, 152.
Mollusca: Unio pictorum at Ossington, 20, 112; Large Anodons in Notts., 112; Mussels eaten by Animals and Birds, 181; Amalia gagates at Tuxford, 321.

WESTMORELAND.

Birds: Bibliography, 188, 223; Pied Flycatcher, 125; Avifauna of Upper Teesdale, 353; Macpherson and Duckworth's New Book, 383.
Desmids: Bibliography, 337.
Ferns: 259.
Fishes: Bibliography, 253; Salmonidæ, 282.
Flowering Plants: Bibliography, 332; Melampyrum pratense v. hians, 35; Flora of the Lake District, 86, 96, 235; Solomon's Seal at Witherslack, 259.
Fungi: Bibliography, 339.
Geology: Bibliography, 394.
Lepidoptera: Bibliography, 285; Cœnonympha typhon, 206.
Lichens: Bibliography, 338.
Mammalia: Bibliography, 153; Otterhounds, 329.

YORKSHIRE.

Algæ: Spurn, 92; West Riding Habitats, 232; Dewsbury, 259; List of Marine, Scarborough, 300.
Arachnida: Spurn, 92; New British Pseudo-scorpions, 103.
Birds: Spurn, 4; Twite nesting, Thorne, 9; Hawes, 18; Washburndale, 19: Quail nesting, Wensleydale, 32; Woodcock breeding, Nidderdale, 32; Little Gull, Whitby, 32; Helmsley, 41: Decoys, 44; Hawfinch, Bingley, 58; Curious nesting-place, Reed Bunting, 58; Orange-legged Hobby near Doncaster, 58; Green Sandpiper at Masham, 58; Hawfinch breeding, Masham, 91; Barred Warbler, Holderness, 91; Spurn, 92; Tengmalm's Owl, Holderness, 110; Dotterel, Holderness, 110; Curious site for Wren's Nest, Rillington, 126; Albino Birds, Nidderdale, 127; Water-rail, Nidderdale, 127; Little Auk, Settrington, 127; Halifax, 127; Twite near Thorne Waste, 148; Bittern near Tadcaster, 149; Land-rail near Tadcaster, in December, 149; Nidderdale, 149; Bibliography, 185, 223; Nidderdale, 201; Whitby, 201; Halifax, 201; Arrivals of Migrants in 1885, 247; Anston Stones, 260; East Coast Notes, Spring of 1885, 267; Goosanders, Masham, 269; Curious nest of Thrush, Copgrove, 269; Boroughbridge, 279;

YORKSHIRE—*Continued.*

Great Grey Shrike, Leeds, 298; Nidderdale, 298; Curious site, Missel Thrush's nest, 299; Hawfinch and Water Rail, Boston Spa, 299; Curious death of Swift, 299; Lapwing's Nest with five eggs, 299; Little Auk in July, Tadcaster, 299; Pocklington, 308; Little Owls near Scarborough, 336; Curious place for Cuckoo's Egg, Thorne, 344; Whitby and Kettleness, 349; Avifauna of Upper Teesdale, 353; Rustic Bunting, 364; Former occurrence of Black Game, Blubberhouses, 364; Flamborough, 364: Wensleydale, breeding of Redwing and Dunlin, 364; Blubberhouses, 379; Desert Chat in Holderness, 387; Whiskered Tern, Hornby Castle, 393.

Coleoptera: Spurn, 92; Astynomus ædilis at Hull, 103; and at Wakefield, 206; Boroughbridge, 280; Washburndale, 380.

Diatoms: Bibliography, 338; Surirella elegans, &c., West York, 232.

Echinoderms: Whitby, 349.

Ferns: Ibbetson's list reviewed, 22; Anston Stones, 261; Bibliography, 337; Whitby, 349; Blubberhouses, 381.

Fishes: Spurn, 6; Angler, Whitgift, 60; Whitby, 180; Bibliography, 253; Ballan Wrasse, Flamborough, 257; Basse and Muller's Topknot, Whitby, 269.

Flowering Plants: Spurn, 7, 93; Teesdale, 10; Dewsbury, 13; Hawes, 18: Helmsley, 41; Sheffield, 71; Clematis vitalba, Ledsham, 86; Additions to Wensleydale Flora, 134, 259, 306; Bradford District, 178; Anston Stones, 261; Boroughbridge, 280; Pocklington, 308; Lathræa squamaria near Dewsbury, 320; Flower Service, Staveley, 329; Bibliography, 331; Luminous Wood, 340; Bur-reeds, 341; Whitby, 349; Blubberhouses, 381; Dispersion of Plants, notes on Aliens and Casuals near Wakefield, 389.

Fungi: Æcidium pimpinellæ v. apii, 21; Helmsley, 41; Foray at Selby, 72; List of fungi collected near Selby, 140; Anston Stones, 261; Pocklington, 308: Bibliography, 338; Whitby, 349; Blubberhouses, 381.

Geology and Palæontology: Bibliography, 394; Spurn, 7, 92; Lacustrine marl at Ingleborough, 16, 66; Helmsley, 41: Microscopic Examination of Crummach Lake deposit, 66; Raygill fissure exploration, 119; Megalichthys from the Yorkshire Coalfield (illustrated), 121; Oolites of Cave District, 229; Inoceramus involutus, Ganton Wold, 258; Anston Stones, 261; Boroughbridge, 281; Pocklington, 308; Micro-palæontology of Northern Carboniferous Shales, 313, 370; Whitby and Kettleness, 349; Large Ammonite, Hessle, 378; Mammalian remains at Kelsey Hill, Holderness, 378; Blubberhouses, 381.

Hymenoptera: Spurn, 92; York Captures in 1882-3, 115, 246; Abia sericea, Wensleydale, 246; Yorkshire Sawflies, 263.

Lepidoptera: Spurn, 5, 92; Eupæcilia dubitana, Huddersfield, 15; Hawes, 18; Helmsley, 42; Doncaster, 42; Bingley, 42: Agdistes Bennettii, Redcar, 42; South West Yorkshire, 57; Grassington, 57: Crambus inquinatellus, Huddersfield, 57; Hepialus humuli, Huddersfield, 104; Agrotis ripæ, Spurn, 104; Melanippe unangulata, new to county, 104; Stenopteryx hybridalis and Argyresthia retinella, Huddersfield, 104; Phoxopteryx diminutana, Bishop's Wood, 104; Coleophora fusco-cuprella, a correction, 104; York Captures in 1884, 174; Yorkshire Butterflies, 183; Erastria fuscula, new to Yorkshire, 206; Ilkley, 246; Lycæna corydon, Settle, 246; Anston Stones, 261; Boroughbridge, 280; Bibliography, 285; Vanessa antiopa, Sheffield, 1875, 292; Green Farm Wood, Doncaster, 292; Bingley, 292; Pocklington, 308; Thorne Waste, 344; Heliothis peltigera, Holderness, 347, 393; Ennychia cingulalis, &c., Helmsley, 347; Collix sparsata and Eupithecia constrictata, 347; Whitby, 349; Bradford, 351; Blubberhouses, 380.

Mammalia: Spurn, 2, 92; Hawes, 18; Badger near Barnsley, 34; Helmsley, 41; Seal, Teesmouth, 43; Rudolphi's Rorqual, Goole, 87; Albino Mole, Nidderdale, 88; Bibliography, 152; Whiskered Bat, Warsill, 202; Badger, Nidderdale, 202; Badgers and Red Deer, Wensleydale, 228; Badgers, Nidderdale, 228; Badgers near Ripon, 228; Boroughbridge, 279; Whiskered Bat at Pocklington, 308; Blubberhouses, 379; Sowerby's Whale at Spurn, 385; Grampus in the Humber, 386.

Mollusca: Spurn, 2, 7, 92; Hawes, 18: Paludina contecta, Wressle, &c., 20; Zonites radiatulus v. viridescenti-alba, West Riding, 20; List of Yorkshire Marine Shells, 25, 129; Helmsley, 42; Anston Stones, 227, 260; Settle, 258; Achatina acicula, 270; Boroughbridge, 280; Pocklington, 308; Achatina acicula, Knottingley, 320; Limax cinereoniger, Washburndale, 320: Achatina acicula, Wakefield, 321; Whitby, 348; Blubberhouses, 380.

Mosses and Hepatics: Physcomitrium pyriforme, Thornhill, 21; Sherburn-in-

YORKSHIRE—*Continued.*

Elmete, 36; Helmsley, 41; Barbula princeps, a query, 114; Bibliography, 337.
Polyzoa, Marine: Spurn, 93.
Reptiles and Amphibians: Hawes, 18; Spurn, 92; Bibliography, 252; Lizards at Spurn, 258; Boroughbridge, 279; Pocklington, 308.
Societies: Bradford, 120, 184, 215; Heckmondwike, 71, 184; Huddersfield, 161; Leeds, 142, 161, 310; Malton, 72; Ripon, 215; Rotherham, 162; Sheffield, 161; Wakefield, 70; York, 215; Yorkshire Naturalists' Union, 17, 40, 92, 183, 213, 260, 279, 283, 307, 348, 379.
Zoophytes, &c.: Spurn, 93.

MISCELLANEOUS.

Arachnida: New Monograph of Pseudo-scorpions, 120.
Berwickshire: Fish, 345; Plants, 342.
Bibliography of 1884: 152, 185, 223, 252, 253, 285, 331, 337.
Birds: Ornithological impossibilities, 8; Migration Reports reviewed, 43, 382; Sir R. P. Gallwey on Decoys, 44; Food of Sparrows, 110; Do insect-eating birds cast pellets? 111; Great Tit attacking stuffed birds, 111; Migration, 5, 119; Sparrows in United States, 143; Merlins and their Training, 145.
Botany of the Eastern Borders: 342.
Coleoptera: British Nitidulidæ, 95.
Devonshire: Migrant Birds, 251; Polypodium alpestre, 378.
Dorsetshire: Pseudo-scorpions, 103; Migrant Birds, 251; New Butterfly, 383.
Fishes: Bull-trout, 59, 345; Reproduction of the Eel, 217.
Flowering Plants: New var. (condensata Druce) of Vicia sylvatica, 85; New var. (hians Druce) of Melampyrum pratense, 35; Fertilisation in Phanerogams, 157, 175, 203, 275; Luminous Wood, 326, 340.
Herefordshire: Amalia gagates, 321.
Hymenoptera: Bridgman and Fitch on ichneumonidæ, 95.
Kent: Pseudo-scorpions, 103; Achatina, 321.
Ireland: Mosses, 112; Bulimus acutus, 366.
Lake District: Mosses, 21; also see under Cumberland, Westmoreland, and Lancashire.
Lepidoptera: Variation in European Species, 73, 161; Variation in Hepialus humuli, 104; Process of Skin-casting in lepidopterous Larva, 366.
Mammalia: Harvest-mice in Captivity, 88; Squirrel's Method of Carrying its Young, 202.
Meteorological Returns: 24, 44, 72, 96, 119, 120, 144, 162, 183, 216, 236, 264, 284, 312, 330, 352, 384, 388.
Mollusca: Dr. Jeffreys' collections, 22; Darts of British Helices, 144; Distribution of Bulimus acutus, 112, 181, 366.
Montgomeryshire: Migrant Birds, 251.
Museums: Newcastle, 24; Malton, 72; Sheffield, 161; Chester, 214; Liverpool, 283.
Nomenclature: Trinomial, 23; Law of Priority, 118.
Obituary Notices: John Aitken, 44; Amos Carr, 71; George Mawson, 143; J. A. Blaydes, 161; John Sanderson, 215; Mrs. Burdon, 235; Nicholas Cooke, 283; John Firth, 351; John Hardy, 351; Joseph Sidebotham, 283.
Oxfordshire: Mosses, 21; Migrant Birds, 248.
Personal Notices: C. Ashford, 144; S. D. Bairstow, 283; Geo. Brook, ter., 183; Rev. W. Fowler, 183; Rev. W. W. Fowler, 310; A. F. Gissing, 161; C. P. Hobkirk, 143; H. Seebohm, 215.
Rainfall Returns: 24, 44, 72, 96, 120, 144, 162; also see under Meteorology.
Scotland: Mosses and Hepatics, 21, 144, 259; Plants, 35, 85; Desert Chat, 387.
Shropshire: Amalia gagates, 321.
Societies: British Association, 22, 119; British Ornithologists' Union, 23, 282; Entomological, 383; Geological, 23, 235, 329; Linnæan, 23, 183, 329: Marine Biological Association, 71; Royal Dublin, 184; Royal Microscopical, 215; Royal, 23, 183, 282; Watson Botanical Exchange Club, 184, 263.
Somersetshire: Migrant Birds, 250.
Spurn, The: 1; Etymology, 34.
Surrey: Plants, 36.
Wales: Mosses and Hepatics, 21, 36, 114, 259; Lichens, 259.
Wiltshire: Migrant Birds, 248.

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